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As the result of his researches in the Jervis Library and through their kindness, we are able to reproduce more of the Jervis papers that have been copied and arranged by Prof. Kessler, aided by his good wife. We believe that the majority of this material has never been published before and that the method of construction together with the references to the "De Witt Clinton", all a part of that pioneer New York state enterprise, the Mohawk & Hudson R. R., will be of genuine interest to our readers.

Believing that one of America's greatest and best loved citizens—Abraham Lincoln, should be honored, the Society placed a tablet on the Morgan Annex of the United States Post Office Building, site of the old Hudson River R. R. depot. Abraham Lincoln was the first passenger to use this station on his way to his inauguration in 1861 and four years later his funeral train departed from this same station. In a paper read before our New York Chapter, our Secretary, Warren Jacobs, described the event and the circumstances that attended it. Revised for our publication, the paper is produced herewith and we believe it will be of

interest to all of our members. Eighty years after Lincoln's arrival in New York, a group of members of our New York Chapter and their guests, lunched at the Hotel New Yorker and then proceeded to Morgan Annex where the tablet was unveiled at 3:00 P. M., the hour of the arrival of President-elect Lincoln. Following the unveiling, our members were escorted through the building to witness the handling of the mails. To Mr. Goldman, Postmaster of New York City and to the officers of our New York Chapter we are indebted for a successful affair which all seemed to thoroughly enjoy.

Captain Robinson gives us an interesting account of the Fall Brook Ry., Mr. Mills contributes an interesting account of the Los Angeles & San Pedro R. R. and the first of two papers on the Maine Central locomotives completes the roster of articles in this publication. We hope you will find them all of interest.

At this time, it may not be amiss to announce that the extra bulletin that will appear this summer will be a complete roster of the locomotives of the Southern Pacific Co., handled in much the same way as the Santa Fe bulletin that appeared in 1939.

At this time we also wish to thank those members who have been interested enough to write and express their opinions relative to an increase in dues. To those who have not as yet done so, for details consult your Feb. 1st leaflet, there is still time for you to express your opinions to Mr. Walker.

Our Cover Design

In 1917, the Maine Central R. R. received three new Pacific type locomotives and assigned them Nos. 466, 467 and 468. They were assigned the "St. John's Express" and the "Bar Harbor Express" on the Portland Division, running between Portland and Bangor. Which one of these three engines were the better, was a difference of opinion of their engineers, but general opinion seemed to be that Nos. 466 and 468 were the best of the three with the 468 having a little edge on the 466.

At certain seasons of the year these trains were very heavy and frequently ran in several sections. The "Bar Harbor", routed over the "back road", had difficulty getting out of Lewiston, eastbound and Oakland, westbound. Mr. Hammett, S. M. P., decided to apply a booster to the #466 and in the summer of 1923, this engine in black paint and varnish with gold leaf for lettering, crossed the table at Waterville one evening and went west on #156—the "Bar Harbor Express." She was the first engine in the State of Maine equipped with a booster and she was the first one to handle 14 cars; 12 Pullmans, 1 diner and 1 baggage car, without help between Portland and Bangor. If any locomotive made friends that summer and winter, it was the #466.

The following year Nos. 469 and 470, similar to the three engines received seven years before, were delivered. The #466 was transferred to the Eastern Division and assigned one of the toughest passenger jobs in New England—Nos. 71 and 8, the "St. John's Express", east and west. This train with its heavy C. P. R. sleepers usually consisted of a mail, baggage, express, three coaches and five to six sleepers. The running time was 3 hours and 15 minutes westward and 3 hours and 30 minutes eastward, the distance was only 115 miles, but, that heavy train was subject to make as many as 26 stops, some of them hard ones to leave and the west bound was always subject to delay on account of Customs Inspection at Vanceboro. At the end of a year Mr. Hammett made the statement that the #466 had handled those two trains with fewer delays than any locomotive that had previously been assigned that run.

And so, since we are featuring the Maine Central locomotives for the year, we have departed a bit from our usual custom of having an older type locomotive on the cover. Thanks to our fellow member and artist—Mr. J. Henderson Barr, he has sketched the "Bar Harbor Express" crossing the Kennebec River on the bridge at Fairfield, Maine. The engine is the #466 and the train consists of 10 cars, eastbound. Mr. Barr has caught the spirit of the scene and we congratulate him and at the same time thank him for his fine work.

Some Unpublished Letters of John B. Jervis Concerning Railroad Construction and Operation 1831 to 1835

It is believed that these letters and articles have never been published and it is the hope of the discoverer of them that they may prove of interest to the student of railroad and engineering history. Published with the kind permission of the Jervis Library Association, Rome, New York.

Letter to Churchill C. Cambreling,
Commissioner of the Mohawk and Hudson Railroad.

(C O P Y)

Albany 1st Octr. 1831

To the Hon-
C. C. Cambreling—Comr. of the
M & H Rail Road Cy

Dear Sir/

In accordance with your request I have made a comparative estimate of the cost of laying down the second track for the Mohawk and Hudson Rail Way with a timber rail covered with iron as adopted in the first track and an entire iron rail.

In the absence of practical experience in this country in the expense of entire iron rails, I have relied principally on the experience of the Liverpool & Manchester rail as given in Mr. Booth's pamphlet on that work, and from further particulars given in a Report on the projected Lowell Rail Road. I have predicated the estimate for iron rails on the plan and weight of rail adopted on the Liverpool & Manchester Rail Road. The weight of this rail as given by Mr. Booth is 55 Tons per mile of single road. The cast iron chairs to support the rails at a fraction under 20 tons per mile. In the Lowell report the committee state they have procured a rail with chair, spikes and keys of the Liverpool & Manchester pattern—and the weight of rail & chair correspond essentially with the aggregate statement of Mr. Booth. In reference to the spikes and keys to secure the chair to the stone block and the rails to the chair, Mr. Booth gives the aggregate cost for 35 miles of double way, being the amount used on the Liverpool & Manchester Road including main line—lateral branches and passing places. The Lowell report gives the actual weight of spikes & keys but not the Liverpool cost. I find by the weight they state, and the entire cost as given by Mr. Booth on the Liverpool road for these two items, the cost per pound in Liverpool is 3¾ cents. This item appeared to me to be low, and therefore, induced me to make a more particular examination. I find however,

it is the same in both editions of Booths pamphlet, and can discover no evidence of errors. As will be seen in the estimate I put this item at 4 cents per pound.

Mr. Booth gives the average cost of the Liverpool rail at something less than 12£ 10S per ton. In the Lowell report the committee say "It is said that rails are now selling at 8£ per ton, and the chairs something less". It is probable the facilities for manufacturing rails have been both improved and extended since those for the Liverpool road were made, and the charges for the patent (which I am informed was about £2 per ton) may be reduced in consequence of the opinion of some English engineers, that a uniform rail of equal strength would be less expensive. The price of iron is probably less than at that time. The Lowell Committee put the cost of rails at £9 per ton. We must bear in mind however, that the price may be based on inferior quality of iron, while the Liverpool rail is of first quality, (English iron). This is only a conjecture, founded on the possibility that the Lowell committee may not have received their information in reference to a specified quality. It appears from the best information I can obtain, that iron rails may be obtained in Liverpool for £10 S10 per ton, of the pattern & quality of the Liverpool & Manchester rail.

The chairs for the Liverpool rail cost as per Mr. Booth's statement £10 S10 per ton. As before observed the Lowell committee state, they can be obtained for something less than £8. The Lowell report has no date, except that given by the printer in the title page, which is 1831. It was probably made in the month of March or April. The price of iron being different at different times, will account for some of the variation in the two statements. And some of the other causes mentioned in reference to iron rails very probably operate to reduce the cost of chairs, since those were made for the Liverpool road. I have taken £9 per ton for this item, which I believe will be found adequate.

In the comparative estimates I have left out that which is common to both plans of construction. It will be observed there is a small increase in the cost of some items for timber rail, over that stated in my estimate for the 2nd track as per my letter of June 21st. The reasons for this increase are, a small rise in the price of timber, the adoption of the flange rail, a small addition to the weight of end plates, the rise in the price of spikes and the chairs entire instead of a portion of?

ESTIMATED COST OF IRON RAILS

55 Tons Iron Rails @ £10S10 or 46.62 per Ton	$2564.10
20 Tons Cast Iron Chairs @ £9 or 40	800.00
3000 lb Spikes for Chairs @ 4 Cents lb	120.00
3500 lb Keys for Rails @ 4 Cents lb	140.00
	3624.10
For Freight, Insurance, Commission, Exchange and Duty add 50%	1812.05
Putting down Chairs & Rails est'd.	150.00
per mile	$5586.15

ESTIMATED COST OF TIMBER RAIL

Rail Timber as per Contract per Mile	593.00
Castings for Chairs 12500 lb @ 4 Cents	500.00
Wedges	40.00
23 Tons Iron Rail plate @ $55	1265.00
377 lb end plates @ 7 Cents	26.39
2500 Spikes @ 8½ Cents	212.50
586 Cross Ties @ 20	117.20
Putting down chairs Rail Timbers & plates	400.00
per Mile	$3154.09
Cost per Mile of Iron Rail over Wooden Rail	$2432.06

The length of 2nd track between the branches at the heads of Inclined Planes is 13 9/10 miles. Of this 10 3/10 miles is on ground suitable for laying a stone foundation; the remaining 3 6/10 miles is embankments that will not be sufficiently consolidated to lay this kind of foundation the next season. All the embankments, except about 30 chains, or say 4/10 of a mile on the part embraced in the present calculation for a 2nd track, will be made of sand, and the whole will be completed this fall. The sand embankments settle in much less time than those made of clay and although it would not be safe to put stone foundations on them as early as next spring, yet, they would be so far consolidated as to admit of putting down iron on wooden cross sleepers. The exception above for 4/10 of a mile is when the embankment is composed of clay, which I fear may settle too much, in some possible cases, as to injure the iron rails. Perhaps it will be advisable to procure iron rails for the whole of the 2nd track between the inclined planes, although we may use timber on the clay bank, until it is sufficiently consolidated to bear the iron. As the Board of Directors may desire to see each calculation separate, I have made a statement for the extra cost of iron rails for 3 different cases.

1st Extra cost of iron rails for 10 3/10 miles on stone foundation @ $2632.06	$25,050.21
2nd Extra cost for 13½ miles on stone foundation and sand embankments @ $2632.06	32,832.81
3rd Extra cost for entire 2nd track between head of plane branches—13 9/10 miles @ $2632.06	33,805.63

I would recommend the Company to adopt the 3rd case by which they will have one entire iron track as soon as the clay embankment is sufficiently settled. I attach more importance to this, from the belief that we shall find the English engine too severe to be sustained for any considerable length of time on a timber rail.

The question whether the Board of Directors would adopt the iron in preference to the timber rail for the 2nd track, is one which I view at this time as more important than I have formerly done. The character of a passenger business is one which demands an arrangement of the least practicable interruption. The expectations of the public have been so much excited in reference to rapid travelling (and that must be by locomotive steam power) that they will not be satisfied with moderate speed, say 10 or 12 miles per hour; they must have 15 as a

regular business. Larger engines may be used on an iron road with very little increase of their daily expense, and will therefore, be more economical for the work they do, than those which must be used on a timber rail. The Rail Road System I view as quite in its infancy in this country, and it is therefore, difficult, and I may say impracticable, to determine what is the best method to adopt. A few years and perhaps a few months experience, may show our present views in reference to some important particulars to be quite erroneous. In cases when the amount of business to support a projected rail road is somewhat uncertain, and at least quite unsettled, prudence seems to demand that economy in the first cost of construction should be carefully consulted. It is however, gratifying that the work under consideration is not of that doubtful character: on the contrary it is well settled that it is to be the avenue of an immense passenger business, in addition to that of transportation of goods, and in my opinion not only justifies, but calls for the most approved mode of construction. The plan we have adopted in the road already made has the appearance of answering all our expectations so far as absolute strength is required; but the operation of the English engine already shows that timber is not a suitable material for rails where so great a weight is brought on it, as is the case in this engine: the rails do not break, but the wood compresses under the plate, and this will eventually destroy the timber. Without iron rails I have no doubt we shall abandon the use of the English engine; we may run her this fall, which will show sufficiently clear that her weight is inadmissable on a timber rail, and unless we construct an iron track on which we may use her, she will be abandoned.

In my estimate it will be observed I contemplate the rails, chairs, spikes and keys will be procured from England—these items all require to be made to fit together, and therefore they should all be furnished from the same establishment.

All the preceding calculations have been based on the plan of rail adopted on the Liverpool and Manchester Road, and the question naturally arises, will this be the best for the Mohawk and Hudson road? The Liverpool rail is doubtless a good one, and could be adopted with very little hazard. As before observed there is a difference of opinion among English engineers whether this plan is preferable to the uniform or parallel rail. The Clarion Rail Way has been constructed on the latter plan. Some experiments are detailed in Wood's new edition on Rail Roads tending to show the comparative strength of the two plans: they are not carried far enough to settle the question conclusively, but they show that in bars of nearly the same weight, they supported nearly equal quantities, giving the eliptical bottom (Liverpool plan) a small preference for the same weight of rail. In the experiment the bars were not fastened at the points of support; had this been the case the result would no doubt have been more favorable to the parallel rail. The parallel rail is more easily manufactured and unless the patent charge on the eliptical rail is taken off, or very considerably reduced, I believe a parallel rail of the same cost would have the greatest strength. It has

some advantage in receiving the support at any point, and could be cut to exact lengths in the manufacture, so as to allow the foundations to be put down before the rollers for manufacturing the rails were made. Mr. Hartley, the engineer of the Liverpool docks is in favour of the parallel rail as the most economical for the same strength. Mr. Hartley is an Engineer of great celebrity, and should it be thought proper to consult the experience of English engineers on this subject, I should think from what I have understood of his discrimination in his profession, he would be a suitable man to apply to in relation to this question. As there is a division of opinion among those that have had practical experience, I am not inclined to view it as very important which we adopt, though I am inclined to give the preference to the parallel rail.

One must smile at the reference to fifteen miles per hour as high speed. But otherwise Mr. Jervis was unusually far-sighted about the future of railroads, realizing that they were still in their infancy at a time when there must have been a great shaking of heads about this new-fangled invention. The English locomotive referred to is the "John Bull" which eventually had to have another pair of wheels added to it because of its weight on the drivers (cf. Stevens, Beginnings of the New York Central Railroad, p. 49). The dependence on English products and engineering experience is well-emphasized. Jervis was always willing to learn!

To the President and Board of Managers of the
Mohawk & Hudson Rail Road.

Gentlemen

The general plan of construction for the Mohawk & Hudson Rail Road as has been agreed upon by Mr. Cambrelling the commissioner of the Company and myself is as follows. When excavation occurs or the Embankments are not so high as prevent obtaining a good foundation it is proposed to put down blocks of stone containing not less than two cubic feet, these blocks to be placed on a foundation of broken stone laid below the influence of the Frost & the blocks surrounded to the surface of the ground by broken stone rammed firmly so as to prevent them from changing their position—The upper surface of the blocks to be dressed level so as to give a fair bearing to the rail timber across the whole width. The stone blocks to be placed at every four feet from centre to centre. It is proposed to put on Rail timbers of White Pine 6 inches square, and secure them to the blocks by a cast iron check brace on each side to be well spiked to the stone block and also to the Rail timber. This plan of rail road will have no perishable materials except the rail timber and that being elevated two or three inches above the ground and the only joint being that where the rail rests on the stone block the timber will not be exposed to rapid decay. I believe we may safely calculate the rail timber in this situation to last 12 years and when it is considered that the entire renewal will cost more than $750 to $800 per mile of Single Road including materials and workmanship it appears

to me as presenting the strongest claims to a strict economy in construction and maintenance it will not however be prudent to attempt this kind of foundation on the Embankments untill (sic) they have been thoroughly settled which we may not expect for two or three years—sand will settle and become unalterable in a much shorter time than clay or heavy loam soils. Still it would not be safe to up put the permanent foundations on them during any time next year. It is therefore proposed to support the road over the embankments on post[s] sunk about 4 feet and resting on a piece of 2 inch plank 12 by 18 inches laid in the bottom of the shaft. On the top of these posts a cross sill is to be placed and treenailed into the head; the sills to have a notch or joggle joint cut in each end to receive the rails, the work to be driven firmly together by a wedge between the rail and shoulder of the joint. The rails will not be as well protected on this plan of foundation as the other but the condition of the Embankment renders it necessary to resort to it in the first construction or submit to a delay that under existing circumstances would be inadmissible. This mode of construction is estimated to cost about $1300 per mile less than that on stone blocks. The question in reference to the quality and dimensions of the rail timber has not been fully decided. White Pine timber has the advantage of a very little tendency to spring when split in any direction and I conceive this to be an important quality. Timber that is quartered or split through the heart has less exposure to decay than square hewed timber, the heart of round timber contracts less by seasoning and especially by rapid seasoning than the part near the surface which causes the surface of the timber to open or as is usually termed to check, and by exposing the timber to the weather the rain falls in the checks and the water is often retained for a considerable length of time greatly to the prejudice of the timber. It therefore becomes an object of considerable importance to obtain a timber that will admit of being split in this manner without producing the disadvantage that arises from warping or springing. The second consideration in reference to timber is its ability to resist the tendency the pressure of the wheels have to crush it under the iron plate. Oak timber (which for rails I consider much the same in point of durability as White Pine) has a decided superiority in this respect over White Pine but the greatest objection to this is its tendency to warp and spring which is a serious inconvenience to rail timbers. Southern Yellow Pine I believe unites in the greatest perfection the qualities desirable in rail timbers the expense of this timber and the deception said to be practised by dealers in the article in delivering a timber so closely resembling it as to make it difficult for those not much accustomed to its use to detect the imposition are reasons which will probably reject its adoption. I am informed that Tamerack is a more durable timber than White Pine. It is a stronger and harder timber and is said to be used to great advantage in the decks of vessels. From the recommendations I have had of this timber I believe for hardness and durability it is equal to Southern Yellow Pine. The questions to be yet understood in reference to it are whether it can be obtained of sufficient size to split and

whether it is likely to be troublesome from warping and springing and if it must be got square of a size for single rails whether it is liable to much injury from sun-checks. On these points I expect to obtain more information in a few days. By the preceding remarks it will be seen that several important points are to be considered in the question of timber. If I were required to decide at this moment I should take White Pine, at the same time I am indulging some hope that the Tamerack may on further Enquiry be found preferable. In some measure connected with the subject of timber for rails is that of iron plates to form the track of the road. If the timber have greater density it will require a plate of less dimensions and weight and as White Pine has the least density of any we propose to use it will be safe to calculate the plates with reference to its adoption. Before I leave the subject of rail timbers however I will make a few remarks in reference to the strength of the proposed size and distance between the bearing points. Rapid travelling is doubtless much more severe on the rails than slow travelling. I observed on the Baltimore & Ohio Rail Road that a carriage travelling at the rate of 10 miles per hour with a load including carriage of 1½ tons produced apparently as much deflection as a load of 3½ Tons on the Carbondale Rail Road moving at the rate of 5 miles per hour. The former Road under equal circumstances should produce less deflection than the latter. It is true my observations were not determined by actual measure but they proved to the satisfaction of my own mind that a very considerable increase of strength is necessary to meet the stress caused by an increase of velocity. I am aware of the indefinite character of the last remark; but I expect an apology from the difficulty of settling it without the aid of accurate experiments.

The distance between the bearing point in the clear will be 2 feet & 10 inches, that is: the distance between the stone blocks from centre to centre is 4 Feet and the smallest width allowed across the block is 14 Inches but where the rails are supported on cross sills the space between the bearing points in the clear will be 3½ Feet. Our stone blocks will be broader on the top than those used on the Baltimore and Ohio Road and will so shorten the space between the bearing points that I am of opinion that good White Pine 6 in. square will be sufficient when the rail must be supported on cross sills and therefore have greater space between the bearings it will I think be most prudent to make the rail 7 inches deep by 6 inches wide. The dimensions of the Iron plates used on the Quincy Rail Road were 5/16 of an inch thick and 2½ to 2¾ inches wide; The rail timbers were White Pine and had a strip of Oak scantling two inches thick and 4 inches wide laid on the top to receive the iron plates. In a part of the road the scantling had been omitted and the plates laid on the Pine timber. In this situation the road had been worked several months, when I saw it and the carriages were regularly loaded with 2¼ to 2½ Tons on a wheel which had not then produced any important effect on the rail timbers, continued use as I have been subsequently informed had caused the Oak scantling to bulge out and yield under the great pressure to which that road was exposed in transporting heavy stone

sometimes carrying 2¾ Tons on a wheel. The strain on this road has been as great as 4¼ Tons to each surface under the wheels. On the Baltimore & Ohio Rail Road they have adopted Rail Plates 2¼ inches wide and ⅝ of an inch in thickness. Their road has not been in use long enough to furnish any practical test of the propriety of these dimensions the plates adopted on the Carbondale Rail Road are 2¼ inches wide and ½ an inch in thickness. They were used last season for the transportation of 10,000 Tons and when I saw them last (1st July inst.) a further transportation of about 12,000 Tons had been effected. They did not appear to have made any other impression on the timber than to have compressed the higher points and caused a more uniform bearing. The weight of carriage and load on this road is from 3½ to 3¾ Tons, a little less than one ton on the wheel and which I consider quite as heavy a load as will be necessary to calculate for the Mohawk & Hudson Rail Road. Hemlock timber of the quality of that used on the Carbondale road is harder than White-Pine and consequently for a similar stress we must embrace a larger surface to sustain the plate. This may be done by widening the plate and thus directly obtaining the necessary extension or by increasing its thickness and thereby adding to the stiffness by which the plate would acquire an extended longitudinal surface to resist the pressure of the wheel. There is an objection to any considerable increase in width from the greater exposure to catch and retain the dust on the surface and this will be especially objectionable on this route. I have under all the views I have taken of this subject come to the conclusion to propose a plate 2½ inches wide on the bottom with the upper edges so curved as to reduce the top width to 1 ⅞ inches and to be 9/16 of an inch in thickness, such a plate will weigh about 19½ Tons per mile of Single Road.

For the width of the road or clear space between the tracks my mind has been divided in some measure between 4 feet 9 inches and 5 feet. The width of the Carbondale Rail Road is 4 feet 3 inches. This road is very much curved which was an argument in favor of limiting it to this width. The force of this argument will be apparent by observing that as we increase the distance between the Tracks on a curved road we raise the ratio of the difference between the length of the outside and inside line of tracks and therefore render the motion of the carriages more difficult. The Baltimore & Ohio Company have made their road 4 feet 9¼ inches though it has much curvature. The Quincy Rail Road is 5 feet and the Charlestown (sic) and Hamburg Rail Road (in South Carolina) is commenced 5 feet wide. The amount of curvature on the Mohawk & Hudson line is too limited to have any influence on this and which tend by racking the frame out of truth to make the carriage question. The reasons in favor of the lesser width are that the frame of the carriages is more easily secured against twisting and the influence of blows which they will receive from frequent contact with each other run bad, and they require less length and size of Axle. The greater width gives more advantage in arranging the carriage especially for passengers but what I view as most important is the greater range given

to accommodate the machinery of a Locomotive Engine and to give more steadiness in the motion of the Engine and its machinery. The difference is not sufficient to make any change in the width of grading and as no road is to be put down untill (sic) next season I think the decision had better be deferred for the present and possibly something may be presented that will produce a more decided preference than I feel prepared to give at this time.

In the location of the line of road we have started from a level 3 feet below top of canal bank at Schenectady from this level we rise by an inclined plane 118 feet to the summit level of our road which is 334 feet above the wharf at Albany. The following Table will show the planes with the ratio of their declivity from the above mentioned point to the head of the plane at Albany—

(Table omitted)

From the last section we descend 185 feet to the Hudson by an inclined plane. The total length of Rail Road from the canal at Schenectady to the River at Albany is 15 miles and 45 chs. but the estimate will include 20 chs. or ¼ of a mile along the Bank of the canal at Schenectady to the culvert near the city.

It is proposed to make the inclined planes on an angle that will have one foot rise in eighteen feet horizontal. To make them on a less angle will greatly increase the expense and if they are to be worked by stationary power will not materially (if at all) improve the arrangement. It has been suggested that in the commencement of business on the road horses might be advantageously employed to travel up the plane with the carriages and by this means dispense for the present with any machinery. In the first instance this plan struck me as one that might be adopted for passengers in the commencement of the work to advantage. Further reflection has however led me to a different conclusion even if it should be deemed advisable to use horse power. One of the two methods must be adopted, that is, we cannot take a mixed plan for if machinery be used we must place the Friction rollers to carry the rope in the center of the road which will of course interfere with the horse path. Now if steam power is used I consider it fully settled that the machinery will be stationary: and if horse power be adopted I believe there are conclusive reasons in favour of performing the work by similar machinery. In the first place, if the horse travels on the plane with the carriage he must expend a large portion of his strength in carrying himself up the acclivity and unless we submit to a great loss of power the carriages must move much slower up the plane than could easily be effected by machinery and the economy in power may be greatly promoted by the use of balance wagons of similar weight to the passenger carriages to move up and down the plane in opposite directions and thereby nearly or quite counteract the resistance from gravity and leaving little more to be provided for than is necessary to overcome the friction of machinery and carriages.

In the second place, the carriages will move with much more safety in descending the plane by machinery than by the operation of a brake on the wheels which must be relied on if we use a horse path. I have not had time sufficient to prepare and furnish plans and explanations of suitable machinery for this purpose. I can therefore only promise to avail myself of the earliest opportunity to present this subject more fully to the board.

A Mc Adamized horse path should be constructed after the road is in other respects completed so as to facilitate the transportation of stone for the same.

Locomotive Steam Engines will no doubt be used as the moving power, but should this be considered an objection to increasing the expense of a horse path it may be observed that it is not proposed to construct the Mc Adamized path until after the road is in other respects completed and further such improvements may be anticipated in the plan and construction of Locomotives as to induce a delay in the preparation beyond the time when the road may be completed and ready for use.

It will sometimes happen that a Locomotive cannot be used in consequence of being out of order or from the slippery condition of the rails by reason of their being covered with frost, snow or sleet and the temporary use of horses will be necessary. The road will also be improved in firmness by this measure so that on the whole I believe it would not be prudent to neglect the construction of a horse path.

In grading the line of road to conform to the levels and slopes, I have calculated that 17 feet in width would be necessary in the excavation to give sufficient space for a Single Road together with the necessary side drains. The Embankments I have calculated 12 feet wide on the top and both Embankment and Excavation to have side slopes of 1½ horizontal to 1 vertical. To these calculations the additional width necessary for double road has been added for the inclined planes. In the calculations for culverts and bridges the length is taken for a double Road and contract for Excavation require the spoil bank to be carried back far enough from the commensement of the cutting to allow the extra width necessary for a double road to be taken down without excavating the spoil banks. To increase the width of grading sufficient for a double road no additional expense will be increased for culverts nor for bridges except in the pavement of crossways. The only expense will be in widening the cuttings and embankments.

By an estimate of the cost of constructing the road made by Mr. Fleming and furnished to me by Professor Renwick I perceive the expense of grading the road is put down at $40,000. No statements of the width calculated or the quantity of cubic yards being given it is therefore impossible for me to understand by what principle he found this result. It is evident from calculation that the excavation and embankment on this route taken at the same width and price per cubic yard will amount to about $15,000 more than the route estimated below yet the new route will cost as per estimate near $100,000. It may be difficult

for the board to reconcile this matter and as Mr. Fleming has left no details of his estimate (that I have seen) that will enable (sic) me to follow up any comparison I must leave the subject without being able to give further explanation. The following Estimate is predicated on prices that have been contracted for in relation to the grading and furnishing the Stone Blocks and broken Stone for foundation.

The calculation of the contents of the different items of work have not been made with that care and accuracy which is necessary on determining the final quantity, it is however a near approximation and doubtless as accurate as necessary or expected at this time.

(There follows a detailed table of estimates for grading which results in the sum of $97,402.68. A further sum of $98,652.89 is added for materials and construction of road and ten percent of the total—$19,605.55—for unforeseen contingencies and superintendence. Grand total for construction: $215,661.12).

The plans for Inclined planes not being settled in detail I can only give a general Estimate. They will not be in all respects the same but I think there will not be an important difference in the expense.

Respectfully Submitted By
Your Obt. Servt.
Jn. B. Jervis
Engineer for the M. & H. RR Co.

(Copy)
Albany, July 20th, 1830.

To the President and Managers for the
Mohawk and Hudson Rail Road Company—

Gentlemen

It having been decided at a meeting of your Board on the 1st inst. that measures should be taken to procure a Locomotive Steam Engine from England, in time to have it ready for use immediately on the completion of the Mohawk and Hudson Rail road, it therefore becomes necessary to determine those questions that will affect the construction of the Engine.

In the first place, the width between the tracks must be settled. By reference to my report to the Board dated July 20th, it will be seen that my mind was at that time divided between 4 feet 9 inches and 5 feet. I then stated the leading considerations in favour of the different widths. To have the principal Rail roads in this country constructed of the same width, would be attended with some advantages in the construction of carriages and Locomotive Engines, particularly in reference to the latter. Manufacturers would more readily incur the expense of providing the moulds and patterns necessary for the construction of this kind of work, if they knew they had the chance of offering their work to different companies. It would be an inducement for them to hazzard (sic) more in experiments, and to offer their work at lower prices. What has been done thus far, in the construction of Rail roads

in this country, leaves the question divided between the two widths above mentioned: one of the two principal Rail roads having been commenced with tracks 4 feet 9¼ inches, and the other with tracks 5 feet apart in the clear. The former is the Baltimore and Ohio Rail road, and the latter the Charleston and Hamburg. As those mentioned are the principal roads that have been commenced, when we may expect an extensive use of Locomotive Steam Engines, we may consider ourselves at liberty on the question of uniform construction to take either of the widths before stated. While on this point I would suggest, whether it would not be advisable to inform the Managers of the Camden and Amboy Rail road Company of the width we may determine on, in order to induce them to adopt the same. Their road being essentially for passengers, and in the vicinity of those establishments that may with equal convenience furnish carriages and engines for both, presents more than ordinary inducements to have them in this respect of similar construction.

The principal advantage in tracks 5 feet apart is in reference to the greater range given in the construction of a Locomotive Steam Engine, and the superior steadiness given to its motion on the road. The Liverpool and Manchester Rail road is 4 feet 8½ inches between the tracks; and I have not been able to learn that any inconvenience has been complained of in consequence of this width. The principal Rail roads in England are, I understand, from 4 feet 6 inches to 4 feet 8½ inches clear between the tracks. It is always safe as a general principal to keep to the practice that has prevailed in most extensive use, and especially if there does not appear some new use or extension of object to be accommodated. Experience has given the preference to much lighter Engines than those formally (sic) used in England, on account of the severity of the heavy Engines on the road: consequently, the inducement to widen the road is diminished. Should experience determine in favour of the Winans carriage, or of common carriages with the bearings outside of the wheels, it will be against the greater width. The difficulty of maintaining the parallelism of the carriage frame will be increased with an increase of the width; and the axles must be of greater diameter to have equal strength. On the whole view of the subject, I am of the opinion that 4 feet 9 inches between the tracks, is the most suitable distance for the Mohawk & Hudson Rail road. This is ¼ of an inch less than the Baltimore & Ohio road, but, as the play between the flanges of the wheels and the rails need not be as great, on straight lines, & slight curves, as is necessary on heavy curvatures, we do not require a road quite as wide as theirs for the same carriages.

(Nov. 9, 1830. Copy).

Contracts for Locomotive and Stationary Engine with the West Point association.

This agreement made by and between the West Point Foundry association of the first part, and the Mohawk and Hudson Railroad Company of the second part, both of the State of New York. Witnesseth,

First, For and in consideration of the covenants hereinafter named, the said West Point Foundry Association, agrees, and contracts to furnish the following, viz.

One Locomotive Engine and carriage complete with one Boiler and two Cylinders, of sufficient capacity force to propel Ten Tons on the Rail Road at the rate of Fifteen miles per hour on an elevation of one foot on two hundred and twenty five feet. The plan of arrangement for Machinery to essentially correspond with the plan presented to the Committee of the managers of said Company, except when a departure may be mutually agreed on, Strict attention in all the details of the plan to be paid to render the Engine as conversant as practicable for the regular use for which it is intended, the weight of the Engine and Carriage complete not to exceed three Tons and Two hundred weight and the whole to be delivered on or before the first day of July next in the city of New York.

Also two 12 horse's power (Watt & Bolton's calculation of power) horizontal High pressure Steam Engines with two Cylinders each and connecting Shaft, and wheels agreeably to draft exhibited to the Engineer & Board of Directors of the Mohawk and Hudson Rail Road Company deliverable in New York, the working gear to be conveniently arranged for one man to work or tend two cylinders to work together as the same engine on the same Shaft further to furnish an Engineer free of charge to put together and in operation the said 12 horse Engine in the first of August next.

Second, for and in consideration of the above mentioned Machinery to be furnished as stipulated to be composed of the best materials and workmanship and satisfactorily proved, the said Mohawk and Hudson Rail road agree, and contract to pay the said West Point Foundry association in cash on delivery of the said Machinery as follows,

$3200 For the Locomotive Engine and carriage the sum of thirty two hundred Dollars. For the two 12 horse's power high pressure horizontal steam Engines with connecting Shaft & wheels the sum of four thousand and $4050 fifty Dollars deducting ten per cent which is to be paid on the certificate of the Engineer of the Company that the work has been furnished and put up agreeably to the provisions of this contract.

And to prevent all disputes & misunderstandings and to provide for the speedy adjustment of any that may occur it is hereby mutually agreed by and between the parties to this contract that the Chief Engineer for the time being of the said Rail road Company shall be Inspector of the work herein before provided to be furnished and the same shall be made to his satisfaction and acceptance Sealed and signed the fifteenth day of March 1831. In presence

The West Point Foundry assoc.
W. Kemble agt.
Mohawk and Hudson Rail Road Company by
Jas. Renwick Sec.

Witness to the signature of Jas. Renwick
S. A. Kissam

Copy

Articles of Agreement made and concluded this sixteenth day of November in the year one thousand eight hundred and thirty one, Between the West Point Foundry association of the first part, and the Mohawk and Hudson Rail Road Company of the second part; Both of the state of New York: Witnesseth, that the said party of the first part, for the consideration hereinafter named, agree to furnish and deliver on board such vessel lying at their dock in the Harbour of New York as may be designated by the said party of the second part, a Locomotive steam engine; the said engine to be constructed agreeably to a plan of the same as furnished and explained by John B. Jervis Engineer of the party of the second part: the furnace part of the boiler to be rectangular; the flues to be made of copper, which are to pass through and be secured to the cylindrical part of the boiler: The dimensions of the several parts to be as represented on the plan aforesaid and a written statement with calculations furnished by the aforesaid Engineer. The engine to have two working cylinders each nine inches in diameter with a stroke of sixteen inches in length: each cylinder to have connected with it a force pump, with all necessary steam and water valves and pipes, eccentrics, rods, and other parts to make the working gear complete for the use intended. On the front end of the boiler a proper fixture to be made to receive a glass tube for a steam and water gauge so arranged as to admit of taking out a broken glass and conveniently substituting a new one; three extra glasses properly prepared to be furnished with the engine. The ends of the boiler to be secured by tie rods running longitudinally through the boiler. That part of the boiler which surrounds the furnace to be secured by tie bolts round the sides and on the top by iron ribs, of which there is to be two more than represented on the plan. The engine to be furnished with a good and convenient hand force pump, with copper pipes to connect with the water tank on the tender waggon. Oil cups to be provided for all parts that require oiling to be constructed with a cotton-wick syphon as in the Stevenson (sic) engine, belonging to the said party of the second part. The working wheels to be made of cast and wrought iron on the plan of the wheels of the Locomotive engine De Witt Clinton; except that the wrought iron rim shall be made with a flange: The other wheels to have cast-iron naves with wooden spokes and felloes, and wrought iron flanged tire or rim. The frame to be made of good seasoned White Oak timber well ironed and braced where required. The axles, seats and all minor parts of the engine not represented on the drawing or description herein referred (sic) to, or explained shall be constructed agreeably to the direction of the aforesaid Engineer. A complete set of wrenches to work all the screw nuts to be furnished with the engine. The said party of the first part further agrees to furnish a Mechanik to superintend the transportation and to set up the engine on the Rail Road of the said party of the second part and to put the said engine in complete operation. (the said party of the second part to pay the charges of insurance and transportation after the engine is on board the bessel as aforesaid in the Harbour of New York).

The said party of the first part, further agree that all the materials and the workmanship shall be of the best character for the use intended and that the aforesaid engineer shall be inspector of the same.

The said party of the second part hereby agree to pay to the said party of the first part for completing this contract as aforesaid, to the satisfaction of the said engineer the sum of *Four thousand* and *Six hundred dollars* in the following manner to wit, eighty per cent of the contract price when the engine is ready to ship in New York, an addition of ten per cent on the certificate of the aforesaid Engineer that the engine is set up on the Mohawk and Hudson Rail Road agreeably to the provisions of this contract, and the balance (being ten per cent) on the further certificate of the said Engineer that the engine has run one month during which it has proved to be in all respects a compliance with this contract: Provided, however, that the said engine shall be ready to ship in the city of New York by the first day of April next; and should the engine not be ready by the first day of April next, it shall be at the option of the said party of the second part to receive it or not as they may prefer.

In witness the parties have hereunto set their hand

(Copy)

Wm. Kemble to Jervis, New York, February 16, 1831.

"The order has been given us for the Locomotive & two double Stationary Engines to the draft shown you . . ."

(Kemble was head of the famous West Point Foundry. The locomotive referred to was the DeWitt Clinton, although the actual signed contract for it was apparently not drawn up until March 15).

Adam Hall to Jervis, New York, February 26, 1831.

"We have commenced on the Locomotive Engine and I hope will be finished in time for you the wheels of iron as was contemplated 34 inches diameter wrought iron spocks Rime of Cast Iron and hooped with Wrought Iron Each Wheel will be 35 lb heavier than if made of wood. The Boiler will be different from the plan shown you and much ligter the whole of the Carrege when ready for operation will not exceed the estamated weight and my present Empreason is that she will bear a comparison with the English one in point of workmanship and I hope will equal her in proformence".

(Hall was the actual builder of the engine. Spelling and punctuation were not his strong points. Question: what is the "English one" referred to?)

S. Higinbotham to Jervis, Vernon, N. Y., March 15, 1831.

"P. S. . . . I see by the papers that the stock of the Catskill and Canajoharie road Company is taken up—If this is not a wild speculation I am much mistaken as it is my opinion that the Mohawk river might

more easily be turned out of its valley than to divert the western travel from the same valley".

(The C. & C. was considered important in its time because it was to provide a shorter route from the Mohawk valley route at Canajoharie to the Hudson at Catskill, avoiding the Mohawk and Hudson line! It received considerable state aid but Mr. Higinbotham—supplier of lumber to Jervis—proved right in his prediction and the railroad was never constructed).

Hall to Jervis, New York, July 23, 1831.

"I shall be in Albany on business on Thursday morning if not on Friday but will in no case start the Locomotive Engine untill you are present. Mr. Kemble and myself feel anxious to make a good start for your sake as well as our own. We must be carefull in Albany and I am not afraid the Engine will not disapoint our Expections".

(The DeWitt Clinton was only the third engine constructed by the West Point Foundry and their reputation was still to be made. The first public run was made on August 9, just two years after the ill-fated Stourbridge Lion).

Lynde Catlin to Jervis, New York, July 23, 1831.

"We hope the opening of the road will gratify the Public—establish the credit of the Engine-maker—do honor to our Engineer—and afford high promises of profit to the Stockholders".

(Catlin was treasurer and a director of the company).

John Wurtz to Jervis, New York, July 27, 1831.

"I presume you are nearly ready to start the locomotives on your rail road and as to proposal to burn coal, I take the liberty to suggest to you what I understood took place at the trial on the Baltimore road. I am informed that they commenced with scrub coal, which answered well for a while. But the motion of the carriage soon shook the coal down and settled it in between the bars of the furnace and of course clogged it. They finally resorted to large coal and then had no difficulty.

It occurred to me that this might be a matter of sufficient importance to justify or excuse my troubling you with a letter".

(The Wurtz brothers were connected with the Delaware & Hudson Canal and Coal Company).

Wurtz to Jervis, New York, August 3, 1831.

"A paragraph is going the rounds of the newspapers, in which it is stated, that 'an experiment has been made with a loco-motive engine on your rail road; but owing to the imperfect ignition of the Lackawanna coal, but six miles an hour could be got out of it; in consequence of which the Company has sent for a supply of coke' ". Want details. Says B. & O. had no difficulty.

Maurice Wurtz to Jervis, Bolton, N. Y., August 12, 1831.

"I trust you will be able to use this coal in your Locomotive Engines, there are few persons that succeed well in their first attempts. It is said that your draft is not good, and that the fire was stirred too much, but as on such occations every thing is said, I have thought the last objection of little consequence—the first is made by a practical man & and may be deserving of your notice".

(Little success was had with coal and it was sometime before American railroads abandoned wood as a fuel).

Catlin to Jervis, New York, September 2, 1831.

"I hope to hear by Mr. Cambreling tomorrow a favourable account of your operations and that the Locomotive (Kemble's) will now work—Mr. K. is urging for some money—I have paid him $6000—he wants $5000 more! His Bill he says already amounts to about $12,000—this is a heavy account!

Jervis to Cambreling, Albany, September 22, 1831. Copy.

"We ran the English engine yesterday and some the day before we find some little work necessary to give sufficient firmness to the springs of the tender carriage which will occupy tomorrow. It will all be ready for Saturday morning. Total weight with fuel and water 12,532 lbs. 2/3 on crank wheels.

The English engine is doubtless too heavy for the road; and this is too clearly shown from the little work she has done. It is decidedly my opinion she should not be used on this road nothing but an iron road is sufficient for such a weight".

(This was the John Bull delivered by Stephenson in August to which was later added the famous "bogie" or leading truck in order better to distribute the weight. When ordering the engine, Jervis had suggested one of 3 to 3¼ tons with the weight distributed as equally as possible on all four wheels. As always, early English engines were too heavy for the lightly built American roadbeds and rails).

Catlin to Jervis, New York, September 27, 1831.

"I hope your fears respecting Stephenson's Engine will not be realised. If she is too heavy for rapid travelling we must assign to her the duty of the slower transportation of property."

Kemble to Jervis, New York, September 28, 1831.

"I am anxious to see you on the subject of the Locomotive Engine —Its performance for some time past has been so satisfactory that altho it may not come within the letter of the contract, I think that in equity it should be received in its present situation—since the first shipment

we have expended in various ways upon it not less than $200—which with giving Iron instead of wooden wheels, has taken all profit upon the work—

I understand in addition to Saturday's performance she yesterday brought in four wagons in 38 minutes this with the tender is not far from 15 tons [Jervis inserted here: about 10 tons—I timed the Engine —she was 83 minutes—and on the ascent 1/225 an av. of 6 miles at most]."

Prof. Renwick to Jervis, Columbia College, N. Y., Dec. 26, 1831.

"I had the misfortune to try to burn Lackawanna coal in my house this season, and I can now understand why it did not succeed—the quality that company has sold this season will not burn."

("That" company was the Delaware and Hudson.)

Examination of Benjamin Wright Regarding His Survey of the Proposed New York and Erie Railroad

This is in the form of a communication to a magazine or newspaper and although it is signed by "Citizen" it is in Jervis' handwriting and written in his style, so that one assumes that John B. Jervis was its author. The insistence upon truth and accuracy is the same viewpoint found in the criticism of the Pennsylvania Canal Commission report. Other papers found in the Jervis Library at Rome lead one to believe that Jervis was offered the position of chief engineer and surveyor for the proposed Erie but he refused it. His reasons for doing so are not clear but at the time that he was approached by Governor Marcy on the subject he was working on the Chenango Canal and he might have been unwilling to give up this position. A better guess would be that he doubted the chances for success of the Erie and the following paper reveals considerable skepticism. One must recall that Jervis was quite familiar with the section of the Erie east of Binghamton in connection with his early work on the Delaware and Hudson Canal.

Finally, the reader should keep in mind that the famous Benjamin Wright was Jervis' teacher and friend on the Erie Canal and for a short time on the Delaware and Hudson Canal. This article seems to imperil the long friendship. It is not known, however, whether it was ever published.

Examination of B. Wright on N. Y. & Erie Railroad, July, 1835

In all projects of improvement in which the public have an interest, and particularly those that from their character, or from the manner in which it is proposed to make them, it may be expected the resources of the state will be required for their construction, it cannot be denied incompatible with the duty of any citizen, to investigate the facts, reasons and considerations that may be urged in favour of such projects. To follow out all the considerations that may bear on a project of such

magnitude as that of a Rail road near 500 miles in length, passing over a country highly diversified in its character, would be a task of no ordinary labour. This should not be a reason to neglect it, particularly with those who feel that they have a share not only in the public interest but also in the public burthens. My object however at this time will be merely to touch on some of the leading facts as presented in the report recently made by Benj. Wright, Esq. who was appointed Engineer under an act of the last Legislature to survey and estimate the projected road.

The standing of Mr. Wright as an Engineer is no doubt viewed by the particular friends of the project as giving importance to anything favourable which he may report. He has been appointed to a highly honourable and responsible duty and it was doubtless incumbent on him to examine and report all the essential facts and their bearing on the projected work, so far as the perfection of the science of his profession would indicate, as proper and necessary to give the Legislature and the Public, a clear and full knowledge of the merits and demerits of the project. How this duty has been discharged by the Engineer it is our present object to enquire.

The Engineer commences his report with an eulogy on the country through which the projected work is designed to be constructed. The character he gives it will no doubt excite some astonishment with those who have had ocular evidence on the subject. But the chief object of noticing this part of the report is to call attention to the particular interest manifested for the project. I think no one can candidly read the first three pages of the report without seeing the working of a mind labouring to show, not the facts of a survey, but the propriety and importance of constructing the work. Is it not the language of an advocate, rather than that of a witness called to bear testimony to facts? I leave the answer to those who read the report, and proceed to the part relating to the *appropriate* duties of the Engineer.

The Engineer says he has personally examined every part of the route where "there could be any reasonable doubt or difficulty". He then proceeds to say "it is possible, and I may say probable the shortness of time . . . may have prevented our ascertaining the *very* best and cheapest route". In the next paragraph he says, "A more minute" &c "will enable the engineer to adopt very considerable alterations and improvements at *many* points, both as to graduation and also the cost of the work". Hence it would seem, the mind of the engineer entertained at first the possibility of improvement in the line he had adopted; from which his idea rapidly rose to the *probability*; and in their onward course, we find in the very next paragraph that important improvements *will* be made "at *many* points". To gravely say in an important communication, that a thing is possible, then probable, and then assert the fact, is to say the least of it, rather *unphilosophical*. But if the fact of a better route is known, why not adopt it, and make it the basis of his estimate and report. It certainly would not be important to notice this item in the report, only as it tends to show what I have intimated: the manifest anxiety of the Engineer to present the subject in the most flattering view.

We now come to some principles on which the Engineer says he has based his operations.

To secure "rapidity and regularity" he considers it "of paramount importance . . . to avoid the use of stationary steam power on inclined planes, as being productive of delay, danger, expense and difficulty" in which with the exception of a single instance he says he has been successful, and "brought the whole line within the power of locomotive engines drawing passenger cars, *light* merchandize, and the public mail". There can be no doubt it is highly important to bring the road to a grade that will be adopted to an economical use of locomotive power; and we will now see how our Engineer succeeds in this *important* feature of the project.

He says, "the steepest acclivity encountered . . . with the exception before mentioned, will be *only* one hundred feet per mile: and having been furnished with *satisfactory* evidence that by recent improvements in the Baltimore and Ohio rail-road, they have been enabled to ascend an acclivity of one hundred and seventy-six feet to the mile, drawing between *five* and *ten* tons weight. I rely upon that fact in stating, that locomotive steam engines may be advantageously used on the whole of the proposed route from the Hudson river to the head of the plane near Lake Erie; that they will be able to pass its steepest grades, drawing at least 70 or 80 passengers with their baggage, while upon at least nine-tenths of the whole route they will be able to propel *very great* burthens at a *great* rate of speed". Here then we seem to have the basis of calculation for the project, and it cannot be deemed irrelevant to the examination, to look a little into the economy of locomotive steampower in overcoming ascents. In this I shall be as brief as possible.

In the calculations I propose, it will be convenient to assume certain positions which in practice may be varied by circumstances, but which will always hold essentially true in a relative view. The co-efficient for friction at the axle will vary with the ratio of wheel and axle, and the perfection of work; but I take the resistance from friction at 1/250th of the gross ton, which is a fair medium. I take the total weight of the engine at 6 tons, and the weight on the working wheels at 3 tons. The adhesion of the engine wheel to the rail at 1/10th the insistent weight; which is the highest calculation for a favourable condition, and it should be kept in mind, that the rails are often in a state that will not allow more than 1/12th to 1/15th, and snow or frost will so destroy the adhesion as to preclude any calculation on its efficiency. But I will give the favourable view of this question, which has been settled by numerous and varied experiments made in the most careful manner by eminent engineers; and I only ask the reader to keep in mind the fact, that dust, rain, heavy dew, hoar frost, and snow, will always reduce the efficient power of the engine. The weight of the engine tender: 5000 pounds.

Taking the data above mentioned, we have: 6000 divided by 10 equals 600 pounds, the efficient power of the engine. And 600 multiplied by 250 equals 150,000 pounds or 75 tons the load the engine will draw on a level.

To ascend at 20 feet per mile, a portion of the power of the engine must be appropriated to overcome the gravity of the engine: for this ascent it will be 12,000 divided by 264 equals 45.45 pounds and the power applicable to the load will be 600 minus 45.45 equals 554.55. To ascend this plane, the resistance to the load will be 1/250th plus 1/264th equals 1/128.4 and 554.55 times 128.4 equals 71,204 pounds equals 35.6 tons.

To ascend 40 feet per mile we have 12,000 divided by 132 equals 90.9 pounds. And 600 minus 90.9 equals 509.1 pounds applicable to the load. The resistance to the load will be 1/250 plus 1/132 equals 1/86.38; and 509.1 times 86.38 equals 43,976 equals 21.98 tons.

To ascend 60 feet per mile we have 12,000 divided by 88 equals 136.36 and 600 minus 136.36 equals 463.64 pounds applicable to the load. The resistance to the load will be 1/250 plus 1/88 equals 1/65.08 and 65.08 times 463.64 equals 30,173 equals 15.08 tons.

To ascend 80 feet per mile, we have 12,000 divided by 66 equals 181.81. And 600 minus 181.81 equals 418.19 pounds applicable to the load. The resistance to the load will be 1/250 plus 1/66 equals 1/52.21. And 52.21 times 418.19 equals 21,833 equals 10.91 tons.

To ascend 100 feet to the mile, we have 12,000 divided by 52.8 equal to 227.25. And 600 minus 227.27 equals 372.73 pounds applicable to the load. The resistance to the load will be 1/250 plus 1/52.8 equals 1/43.58. And 372.73 times 43.58 equals 16,243 equals 8.12 tons.

From the load found we must deduct the engine tender which leaves for freight and freight carriages the following result:

On a level, 75 minus 2.5 equals 72.5 tons.					
On an ascent of	20 feet per mile:	35.6	minus 2.5 equals	33.1	tons.
On an ascent of	40 feet per mile:	21.98	minus 2.5 equals	19.48	tons.
On an ascent of	60 feet per mile:	15.08	minus 2.5 equals	12.58	tons.
On an ascent of	80 feet per mile:	10.91	minus 2.5 equals	8.41	tons.
On an ascent of	100 feet per mile:	8.12	minus 2.5 equals	5.62	tons.

It therefore appears the effective load will be reduced in the ascents in relation to the level as follows:

At	20 feet to the mile	to 45	per cent	or less than half.
At	40 feet to the mile	to 26	per cent	or a trifle over one-quarter.
At	60 feet to the mile	to 17	per cent	or say one-sixth.
At	80 feet to the mile	to 11	per cent	or one-ninth.
At	100 feet to the mile	to 7	per cent	or one-fourteenth.

It has been found that five passengers with their baggage including their ratio in the weight of carriages is equivalent to one ton. This applied to the above results, will give for the load of the engine:

On a level—	362 passengers.
Ascent of 20 feet per mile—	165 passengers.
Ascent of 40 feet per mile—	97 passengers.
Ascent of 60 feet per mile—	63 passengers.
Ascent of 80 feet per mile—	42 passengers.
Ascent of 100 feet per mile—	28 passengers.

But the Engineer has a fact that *satisfies him*, and produces a very different result. Now, what is this important fact upon which we

are called to abandon those principles which have been settled by repeated experiments? If it is to lay the foundation of his operations, we should naturally suppose, he would give the particulars in such a way as to enable us to judge whether it was sufficient to overthrow what had been obtained by numerous and careful experiments and sustained by the best experience on this subject. But he has not condescended to do this. On the contrary, the case is given in the most vague and indefinite manner. The weight of the engine, whether it had two working wheels only, or had all its wheels connected—the weight on which adhesion should be calculated—whether its tender was fully or partially loaded for the experiment and whether the engine started from a state of rest, or came to the ascent with the aid of a momentum derived from a high speed, all questions essential to be known, to arrive at a satisfactory result, but which have not been given. And what is, if possible, more extraordinary, the result of this very experiment as he gives it is singularly indefinite, being stated at "between *five* and *ten* tons". Now, our Engineer *relies* on this *fact*, which by his own showing, has been so vaguely noticed, as to leave it uncertain whereabouts between five and ten, the result was to be found. And on this he bases the plan of a project that he estimates will cost five millions and in his own opinion will deeply affect the interest of a "*long* line of countries". There is certainly a singular boldness in this proposition, which I should think no intelligent engineer, who in the least regarded professional accuracy, would hazard. The closing sentence of this paragraph, in relation to "nine-tenths of the route", where he says of the engines, "they will be able to propel *very great* burthens at a *great* rate of speed" is in keeping with the vague and indefinite character before observed.

If the weight I have taken for the engine should be objected to as too small, I reply, it is the opinion of those most conversant with the subject, that 1½ tons on a wheel, is as heavy a weight as should be adopted for engines designed for high speed. And that such engines should have but one pair of working wheels. But a larger engine will be immaterial to the comparison: it will have the same relative effect, unless some new *fact* should furnish "satisfactory evidence" that the laws of gravitation had changed. In view of the high rate of adhesion I have assumed, it is very doubtful whether any engine that it would be expedient to use will increase the load calculated. The curvature of the road will also increase the resistance for which no allowance has been made.

It would be interesting to follow out the application of the above calculations to the whole road, and show the influence the elevations would have to increase the expenses of transportation, or to lengthen the road, so as to make it equal to a level. But the grades are so various, and for the eastern division, they are given in such a manner as requires considerable labour more than I have now time to devote to it, and must therefore leave it for the present. It will be observed, however, that for an ascent of 20 feet per mile, the load must be reduced to 45 per cent, or the expenses of transporting a ton one mile, will be equal [to] the expense of transporting the same 2.22 miles on a level, consequently

a road that has this ascent will cost as much for transporting 100 miles as it would cost to transport 222 miles on a level, abating the wear of carriages. The varying character of the grades will aggravate the difficulty of providing an economical motive power. But I must proceed to another branch of the report.

On a straight line, graded at 30 feet to the mile, a well-fitted carriage, if put in motion will acquire a velocity from its gravity, that in the event of meeting or overtaking other carriages might prove highly disastrous. At 40 feet to the mile it would hardly rest on the road, without some obstruction to its motion. Is it not therefore reasonable to suppose that on a road that has grades 30, 40, 50, 60, 70 and even 100 feet to the mile, that carriages will often get an uncontrolled motion in this way, and produce serious consequences by contact with others?

The grading is estimated for a double track, and the cuttings and embankments each 25 feet. This is quite narrow enough for the embankments, and it is clear the cuttings should be wider than the embankments, in order to allow room for side ditches to drain the road. In most cases the cuttings should be from 8 to 15 feet wider than the embankment, and rarely less than five. Long cuts require larger drains than short ones. Why, it may be asked, has the engineer neglected to provide for so important a matter as the complete drainage for a railroad? There is certainly no want of experience, as to the importance or necessity of such a measure.

In reference to the use of broken stone for the foundation of railroads the Engineer says, "Experience has, however, satisfied most of the practical engineers, that the road does not stand as well when laid on broken stone, as when laid on plank or timber. And the estimates have been made upon the latter plan. It is true, that almost everywhere along the line of the proposed road, there is small flat stone, gravel or sand; and when the plank or scantling are laid in trenches, the small *flat* stone may be thrown in, and rammed down, and they operate as drains to cart off the water from under these timbers into the side drains". There is no doubt there are cases, where broken stone have been put down in so careless and slovenly a manner, as to form no better and even not as good a foundation as may be made with timber, but is experience of this kind to be the test by which an engineer should form his opinions in laying plans for work of such magnitude as that under consideration? Is it reasonable to suppose that timber will make a foundation of equal firmness and durability, as broken stone will put down? Shall we stop to discuss a question that seems more like a self evident axiom than as admitting any room for discussion? A foundation of broken stone well put down and properly drained will be more expensive, but experience has shown it to be the most solid as well as the most durable, and I venture to presume, that the engineer who has a different experience, has obtained it from putting down his work *badly*. Our Engineer, however, finds flat stone which he proposes to have "rammed down" for a foundation to his timbers. These flat stones are, I suppose, such as would in general be suitable for a *stone fence*; and the *solidity* and *regularity* that will be obtained by this method can be

better imagined than described. Now, the only object of breaking stone for such purposes is to fit them for ramming down in a more compact and solid form than could be given to common flat stone or gravel. That this result is obtained, cannot be a matter of doubt to those who have properly made the experiment. To say the least of it, this position of our engineer, requires the weight of great authority to carry it against what in my humble opinion is the dictate of common sense.

The estimate of cost is based on grading for a double road, while only a single set of tracks with turnouts for the superstructure is estimated. But why grade for a double road and only put down a single one? He says a single track is all that should be put down "until the road is travelled nearly its whole length". As nothing more is said, this remark naturally implies a *double* track will *then* be warranted. What then can be the reason it is not put down in the estimate? This feature in the report certainly has the appearance of a wish to keep the ultimate expense out of view. To suppose the Engineer could for a moment harbour the idea that—single track could accommodate the trade on so long a line of road would be to doubt his sincerity in portraying so amply the resources of the country on the route and the great importance of the trade to be secured. The second track on the plan he proposes would have added over one and a half millions, making the total estimate near six and a half millions; making the cost of a double track about $13,000 per mile.

If we regard the character of the country traversed by this route as passing over hills, *mountains*, deep valleys and broad rivers, it cannot be deemed a moderate trial of our confidence in the Engineer, that we are called upon to repose our faith in the adequacy of this estimate.

The committee on Roads and Canals made a report to Congress June 25th, 1834, from which I have extracted the following in reference to the cost of rail roads. "On the other hand, the Baltimore and Ohio rail-road has cost as much as the largest of the preceding canals" ($32,000 per mile) "and the estimate for the branch by which it has been proposed to extend it to the city of Washington, a distance of 30 miles, is nearly $50,000 per mile. The Newcastle and Frenchtown, the Camden and Amboy, and the Albany and Schenectady rail roads, have cost very little, if anything, short of $30,000 per mile; and the Columbia rail road of Pennsylvania, 82 miles, and the Portage rail road, 36 miles long, it is now known, have cost per mile, the former more than $42,000 and the latter more than $43,000 a mile".

The two first and fourth roads noticed in the above extract have not, I believe, any iron rails; but are timber rails capped with iron; with the exception of a small portion of stone rails on the Baltimore & Ohio road; some part of the foundation is broken stone and blocks, but the largest part is believed to be timber. The 3rd, 5th and 6th have probably a majority of iron rails on stone foundation. The 5th has two inclined planes, and the 6th has 10 planes overcoming 2500 feet elevation, each requiring an engine of 30 or 35 horses power. The extra expense of the 10 planes would leave the cost of this road at least $40,000 per mile.

Here we see a number of important rail roads, and some of them over countries remarkably favourable for their construction, and to a great extent constructed of timber, yet the lowest cost is $30,000 per mile, and for those where a larger part is of durable iron & stone $40,000 per mile. But probably our Engineer will say, he will use timber instead of stone and iron and thereby make a cheaper work. It will readily be conceded that this would make *cheaper* work, and probably it would be the most judicious to use timber to a larger extent in the first construction, more particularly for the rails. At the same time, can any reflecting man arrive at any other conclusion than that, if this *long* line of road is worth making, it must ultimately be made of substantial and durable materials; and that this view should be candidly presented to those who are expected to appropriate their own funds, or those of the public for its accomplishment. The saving of the transportation of iron rails to the line of road, will be an argument in favor of timber rails for the first track, and probably while timber on the line is to be had at a low price, their cost will be covered by a saving of interest on the excise in the cost of iron. But as the facilities of transportation increase, the cost of timber will be enhanced, and if the commerce should prove worthy of the expense of the enterprise, it will be highly important to construct the work on the most substantial and durable plan in order to avoid the interruption and danger that will arise from frequent repairs. It should be kept in view that the timber rail is not merely exposed to the ordinary causes of decay; it being ascertained that the part under the rail plate decays much more rapidly than in ordinary exposure and the least ? here allows the iron plate to bed in and deranges its perfection and soon destroys its usefullness.

The broken stone may be better put down in the first construction of the work and then after the timber structure of the first track has decayed, the blocks and iron rails can be put on with the least practicable inconvenience to the business of the road and the second track should be put down as soon as the first is completed to afford the means of easy transportation, and this should be of substantial and durable materials. Though something may be saved in interest on the first track, it cannot be doubted the timber work if constructed will soon be replaced with stone and iron and we should therefore in estimating the cost, take this view of the subject.

I do not doubt that wooden rail roads may be adopted with advantage when want of capital, difficulty in procuring stone, abundance of timber, may offer arguments that should be yielded to, when a short road or a special or limited amount of business is contemplated; but to suppose a public thoroughfare, near 500 miles in length and as contended, constituting an important avenue of commerce, will be maintained on a wooden rail road, for any considerable length of time, is certainly anticipating a retrograde movement in the science of rail roads and cannot, in obedience to reason and experience be entertained.

If we apply the actual cost of the cheapest road, before quoted from the congressional report, we shall have for the cost of the projected work about fifteen millions; if we apply the cost of the highest it will be about twenty millions.

Perhaps the Engineer may say to us, that the same work may now be done at much less expense, that there has been inexperience or improvidence, or both, in the management of these roads. But, shall we give the wisdom of experience for that of conjecture? Is it more safe to take a calculation on probabilities than the guide of experience? Has not this state had enough of the uncertainty of estimates to be at least cautious how she advances on a project that in all probability will draw millions from her treasury?

I have no objection to the construction of the projected road, if in view of all the considerations that have a bearing on its expense and usefulness, it shall appear worthy. And certainly if individuals are disposed to encounter the enterprise by appropriating their own resources, they have the right and should have the privilege. It is in view of the call on the resources of the state, that I have been induced not to write against the project, but to present some of its important features in their true light. And now, let me call on my fellow citizens to candidly examine this subject to strip it of all that is illusory, to examine particularly the statement I have given of the relative performance of locomotive engines and decide on the prospect of usefulness in a road that departs so *variously* and so *largely* from a level and decide, whether we have the information that is requisite to guide us in determining on the merits of an enterprise, that in all probability will cost fifteen or twenty millions—which is extraordinary in some of its important features—and which may be considered of doubtfull utility.

There are other important considerations connected with this subject which, for want of time, are not noticed by a

CITIZEN

Feby 1835

Remarks on the Report of the Pennsylvania Commission on the Performance of Locomotives

Mr. Jervis shows in this paper his skill as a critic of other members of his profession and also his desire that the truth be known at all costs (including the reputation of the Pennsylvania Canal Commission). His reference to the need of investors for full and accurate information is interesting evidence, first, to the fact that would-be investors were quite numerous, even as early as the 1830's, and second, that investors were almost as helpless as they are now in obtaining and interpreting accurate information. Were he now alive, Mr. Jervis would probably approve of the Securities and Exchange Commission! His insistence upon including a sum necessary to replace the worn-out locomotives (depreciation) is proof of his ability as an economist and accountant as well as an engineer.

It is not known whether or not this paper was published as an article or as a "letter to the Editor", if at all.

In their late report the Canal Com*n* of Penn*a* when speaking of the operations of the last year on the Columbia Rail way, Page 7, say "It is ascertained that the cost of running locomotives on the Columbia Rail way is about fifteen dollars and twenty five cents per trip of 77 miles, and the majority of the American engines in their ordinary trips draw a gross load of *75 tons*. One of them has drawn *100 tons* and several others from 80 to 90 tons over the highest grade on the road" (the highest grade is believed to be 33 feet to a mile). The above extract is given as presented in the report, underscored when it is italicised in report. The report leaves the matter without further explanation and if there had been no accompanying documents to illustrate the matter, it would have presented the subject to the world as a fact fully set forth, and upon which any man would have as good authority for similar cases. Now what is a just subject of complaint in this matter is that the statement is false as appears from their own documents, and calculated to deceive those who may be desirous of entering into similar enterprises. No one would suppose on reading the above paragraph but what it was a full exhibition of the cost and performance of those engines on a business scale of operation and as the documents were not printed in all cases, or did not accompany a part of their reports, no other conclusion could have been formed from the report.

At page 44 of the accompanying documents a detailed statement of the daily cost of running an engine over the 77 miles exclusive of the attendance at water stations is given at $15.17½ and this no doubt is what the Com*n* alluded to in their rep*t* and had they so expressed it the thing would have been fair and upright. It is to be presumed they had no intention to deceive the public but the ? in expressing themselves on important a matter in a public document is very reprehensible and calculated to deceive those who invest their money on the faith reposed in such official papers.

In addition to the above there is the expense of water stations not less than $1. per day for one engine, and $2. per day for repairs of engine. These items are not given in detail, but they are estimated from the general acct of repairs contained in said reports. Also the interest on the cost and a sum to provide for renewal of the engines. At page 35 of the rept it is said, "This, it is evident, will not be sufficient, as the durability of an engine will probably not exceed four, or, at furtherest, 5 years, &c". The engine is estimated to cost $6400 and if its durability will not exceed 4 or at most 5 years we cannot put the interest and renewal at less than 30 per cent or $1920 per annum on each engine. The report says, page 33, that "in consequence of repairs required, not more than two thirds of the number on the road can be kept in condition for actual service". Taking this with the detention by snow and want of freight in winter the engines cannot run, or make over 200 passages in a year and the $1920 must be charged on this time.

We are now prepared to show the real daily cost, to wit:

Daily expense as per rept	$15.17½
Water stations and repairs	3.00
Interest & renewal 1920 divided by 200 is per day	9.60
Total daily expense is	$27.77

or nearly double that stated by Com*n* in their general report.

Now let us see how the Com*n* are borne out in their statement in relation to the load conveyed by their engines. They give some extra cases of 80-90 and 100 tons for gross load but the ordinary load at 75 tons gross—that is, including *freight & cars*—The freight is equal [to] 2/3 of the gross load, or in this case the load is 50 tons nett—15 cars is called a full train. No reserve is expressed and the reader would infer the ordinary gross load to be 75 tons or nett 50 tons. But it is fortunate to a proper understanding of this matter that we have in particular the number of cars drawn by each engine from 10th July to 31st of October —see page 41 of said report—here a statement given by the super*t* of the motive power shows that the average of all the trains is a fraction under 9 cars per train, or in the relation estimated above of 5 tons to each car the gross load is 45 tons instead of 75 tons as given by the Com*n* or nett 30 tons instead of 50 tons.

By the statement of the Com*n* the cost of motive power is .39 or nearly 2/5 of a cent per ton per mile—by the account as shown from examining the documents accompanying said report it appears the cost of motive power is 1.22 or over 1 1/5 cents per ton per mile or 3 times the cost given by Comms*n*.

I have no desire to quarrel particularly with the Penn*a* Canal Com*n* but I have a quarrel with all the gross statements made by authority of comms*s* and engineers that tend to deceive the public mind on this subject. Statements of this kind, fully as preposterous and wide of truth as that above given have been made by engineers in official reports. The performance of an engine under the most favourable circumstances and the expense of its management when in the most perfect order, is given to the world as a basis on which to estimate the economy of its power. These statements are generally made when there is not the means of confounding those that make them out of their own mouths, as is fortunately the case (for the public) in the instance we have exam*d* and therefore they go unanswerable from want of data to show their fallacy. These statements do not deceive intelligent engineers who have examined and understand the principles on which locomotive engines operate. Some of them would lead us to believe the power of gravitation had yielded its stern principles and fallen a prey to the improvements in locomotives, that levels were not naturally better than ascents of 20 to 80 feet in the mile, and these splendid improvements in the arts were to ride with their train of cars over hill and dale even better than on a level, at least very near as well.

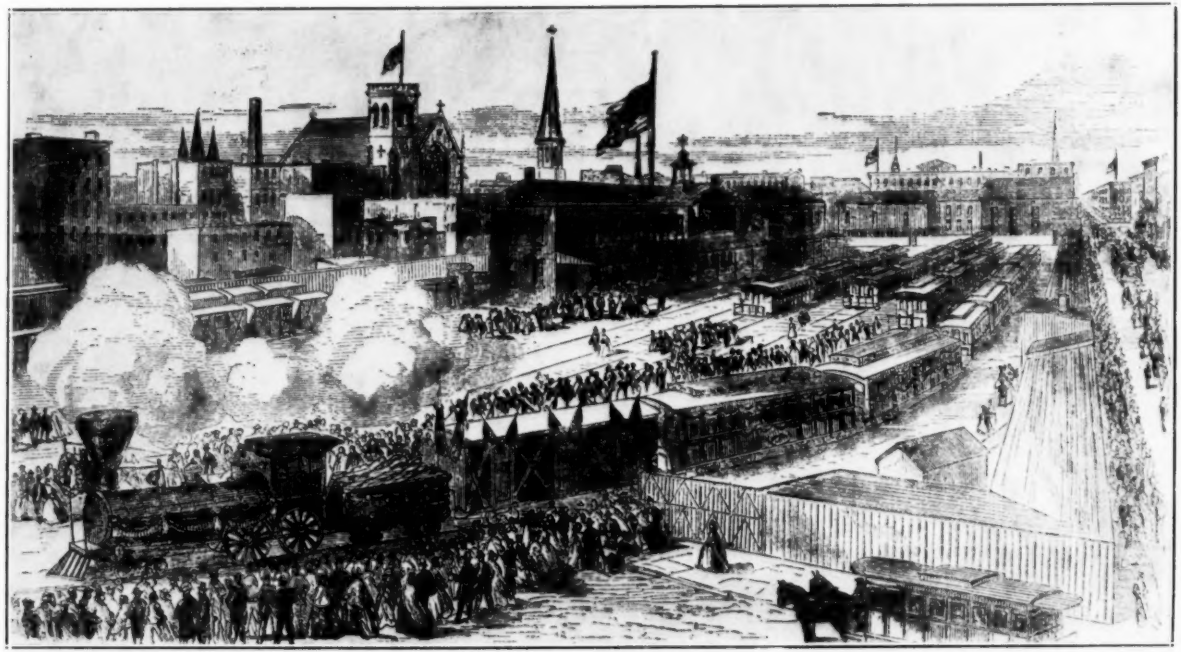
Is it right for men who know better to deceive those who are called upon to invest their money for the purpose of promoting internal improvements? If they do not know they are misrepresenting they must be extremely ignorant of the subject.

There is no statement given in relation to the expense of other things in the transportation than that of the motive power, and we are therefore unable to ascertain what the entire cost of transportation is on this road. The state of Penna only furnish the motive power and therefore the Comn were not called upon to give any further account of the matter.

On the Liverpool & Manchester Rail way the cost of motive power is 30 per cent of the entire cost of transportation (excluding tolls)—see Assembly Document of N. York for 1835 No 296—page 25. As locomotive engines are used on both roads to furnish the motive power, they may be considered as essentially parallel cases. By this parallel the entire cost of transportation on the Columbia road is 4.06 cents per ton per mile.

From the Doct above referred to, page 33, it appears the average cost of Rail road transporn (exclusive of tolls) on a level road is 3½ cents per ton per mile. The Columbia road is not level, and probably the extra cost arises from the elevations that are encountered, and which always affect the cost of transportation.

In relation to the influence of elevations on the economy of Rail way transportation see document before referred to, page 33, where it appears that if the cost of transportation on a level is 3.5 cents per ton per mile, on an ascent of 20 feet to the mile it will be 4.9 cents per ton per mile, on 40 feet to the mile it will be 7.28 cents per ton per mile, and on 60 feet to the mile 9.66 cents per ton per mile. This statement is not in accordance with the views put forward by many at the present day, but is based on the presumption that the laws of gravitation have not changed since the introduction of locomotives on rail roads.



—Courtesy New York Central R. R.

Departure of Lincoln's Funeral Train from the Hudson River Depot.

The Old Hudson River Railroad Depot and Abraham Lincoln In New York

By Warren Jacobs

At 3.00 P. M. February 19th 1941 this Society dedicated a tablet, on the 30th Street side of the Morgan Annex of the New York Post Office, marking the site of the old depot of the Hudson River Railroad and of the arrival there of Abraham Lincoln en-route to Washington for inauguration as President of the United States, and of the departure of his funeral train from this spot on April 25, 1865. The dedication is to be held on the 80th anniversary, and at the exact hour, at which Mr. Lincoln arrived at the 30th St. station, 3.00 P. M. February 19th 1861. That the members of the Society, and especially the New York Chapter, shall have a detailed account of this historic depot, and of the visits of Abraham Lincoln to New York City, is the object of this article.

The Hudson River Railroad was chartered in 1846 to construct a railroad from New York to East Albany and was completed in 1851. The first station in New York was at the corner of Chambers Street and West Broadway, the cars being hauled down town by horses. In the New York Tribune for November 3, 1849 is the following account of the construction of the road in New York City;—"All expedition is used in the laying of the city track. The rails are nearly ready for the cars from the steam depot to Hudson Street and in this street, where certain opponents have done their best to stop the spirit of progress, the pick and spade are upheaving the stones and making room for the iron. The Company are getting their horses and drivers in readiness and we shall soon have the pleasure of a six penny ride in the bracing air of the north side".

The railroads were among the first enterprises in the up-town movement. The Harlem and the New Haven moving up to a joint station on the site of old Madison Square Garden in 1857. In 1861 the Hudson River Railroad erected a new station on 30th Street, between Ninth and Tenth Avenues, which was opened on February 19th. Abraham Lincoln was the first passenger to use this station, a reception being held in his honor in the waiting-room and it was also from this station that his funeral train departed on April 25, 1865.

In 1869 the Hudson River Railroad and the New York Central were consolidated as the New York Central & Hudson River. 30th Street station was in use until the opening of the first Grand Central Depot in 1871. The Harlem was the first to use Grand Central, then the Hudson River Division and finally the New Haven. In an advertisement in the New York Tribune is the following announcement;—"Commencing Monday, November 13, 1871 Through trains will leave from the New Depot 4th Avenue and 42nd Street. All local trains from north of Yonkers will leave New Depot. Yonkers special trains from 30th Street west side as heretofore." This continued for some time, but eventually local trains were transferred to Grand Central, with the exception of

one local known as the "Dolly Varden", making at first three, and then two round trips between 30th St. and Spuyten-Duyvil. In its later years the crew of the Dolly Varden were Frank McCabe Conductor; John Cummins, Engineer; John Held Fireman, James White Baggagemaster and Pop Hyde Brakeman. Old 30th Street station was one of the landmarks of New York City, the oldest railroad station on Manhattan Island. It was an ancient looking building covered with ivy and on the east side of the station was an old stable, used by the stages that connected with the trains.

One man connected with the history of the 30th St. station and later known to everyone connected with the New York Central & Hudson River Railroad should be mentioned and he is John M. Toucey. Mr. Toucey was born at Newtown, Conn. in 1828 and began railroading on the Naugatuck Railroad in 1848. He came to the Hudson River Railroad in 1855 and held various positions until 1862 when he was made Asst. Supt. and in 1867 Supt. He became Gen. Supt. in 1881 and General Manager in 1890. Mr. Toucey was in service on the Hudson River Railroad when Abraham Lincoln arrived at 30th St. station in 1861 and was Asst. Supt. when Mr. Lincoln's funeral train departed in 1865.

To visit old 30th St. station was like turning the clock back seventy five years. From the roar of Broadway to the quiet of the old yard was a change never to be forgotten. A few milk cars on the 29th St. side of the yard, some old trees at the east side, a long platform at the passenger station with a weatherbeaten bell under the platform roof, used by the Conductor in the old days when ready to start his train and in a closet in the waiting room was stored a life sized statue of Commodore Vanderbilt. These and many more relics of a by gone day made the old station a most fascinating place to visit and in its passing there vanished a relic of old New York that can never be replaced. Few knew its interesting history.

Let us now turn from the old station to the most distinguished passenger that ever crossed its threshold, the greatest American, with the exception of George Washington, this country has ever produced. Of his first visit to New York but little is known. About all we do know is that he left on the Norwich Line for Worcester on the evening of September 11, 1848, but at what hotel he stayed or how he spent his time in New York, is something no one to-day will ever know. His trip through New England is fully described in Bulletin 33 of this Society. He did not return to New York but went direct from Boston to the west over the present Boston and Albany Railroad.

Abraham Lincoln's next visit to New York was in 1860 when he received an invitation to speak at Plymouth Church, Brooklyn. This famous church, of which Henry Ward Beecher was the pastor, was erected in 1849 and acquired world wide fame. Both Mr. and Mrs. Lincoln have attended Plymouth Church. Mr. Lincoln arrived in New York on Saturday, February 25, 1860 and stopped at the Astor House. He was notified that he was to speak in Cooper Union instead of Plymouth Church and spent a part of Saturday in revising his speech. On

Sunday he attended services at Plymouth Church and visited the Sunday School of the Five Points Mission. One of the teachers, noting his intense interest asked if he would be willing to say a few words to the children. He accepted eagerly and the teacher afterward said; "his language was strikingly beautiful, and his tones unusual with intense feeling. Once or twice he attempted to close his remarks, but the imperative shout of, "Go On" would compel him to continue. As I looked upon the gaunt and sinewy frame of the stranger, and marked his powerful head and determined features, now touched into softness by the impressions of the moment, I felt an irrepressible curiosity to learn something more about him, and when he was quietly leaving the room I begged to know his name. He courteously replied, it is Abraham Lincoln from Illinois." Five Points, named for the five streets which formed a junction there, was, half a century and more ago, one of the worst places in New York. Charles Dickens visited this section in 1842 and mentions it in his "American Notes". The Five Points Mission was organized in 1850 and a few years later built the mission building on the site of the old brewery, notorious in the criminal history of New York. Just how Mr. Lincoln came to visit the Five Points Mission we do not know. It was within easy walking distance from the Astor House and we assume that someone, either at Plymouth Church, or the Astor House, told him of it, and Mr. Lincoln with his kindly nature determined to visit it. He must have gone alone, according to the statement of the Sunday School teacher.

On Monday morning several members of the Republican Committee called on Mr. Lincoln and offered to drive him about the city, an offer he gratefully accepted, remarking he had been in New York but once before. Among other places they visited a photographic establishment at the corner of Broadway and Bleecker Street, where Mr. Lincoln sat for his picture. Here he met George Bancroft the historian and remarked he was on his way to New England to see his son in school at Exeter.

In the evening of February 27, 1860 was the great speech in Cooper Union, one of the greatest ever made in New York, and which put Mr. Lincoln in line for the presidency. His audience included such men as William Cullen Bryant, who introduced Mr. Lincoln, George William Curtis, Erastus Corning, President of the New York Central and many other notables. Although he was an entire stranger to the audience, many never having heard of him, except through his debates with Douglas, he more than carried off the honors of the occasion. The following is the editorial in the New York Tribune, for Tuesday, February 28, 1860;—"The speech of Abraham Lincoln at the Cooper Institute last evening was one of the happiest and most convincing political arguments ever made in this city, and was addressed to a crowded and most appreciating audience. Since the days of Clay and Webster no man has spoken to as large assemblage of intellect and mental culture of our city."

We now come to a point in Mr. Lincoln's visit that has been questioned. It is said that early on the morning of February 28, 1860 Mr.

Erastus Corning, President of the New York Central Railroad, called on Lincoln at the Astor House and offered him the position of General Counsel of the Company at ten thousand dollars a year. Dr. Barton, one of the greatest Lincoln authorities, says in his "President Lincoln,", page 71, that this story is "highly improbable". Mr. John W. Starr in his "Lincoln and the Railroads" gives a chapter to this subject—but leaves the reader to draw his own conclusions. The N. Y. C. have no record. We know this; that Mr. Lincoln left New York for Providence from the New Haven Depot at 27th Street at 8.00 A. M. February 28th, changed cars at the Chapel St. depot in New Haven and reached Providence at 4.15 P. M. To get from the Astor House to 27th St. station by carriage he must have allowed at least an hour to be sure of making his train, so if Mr. Corning did make such a call it must have been indeed very early, in fact it would seem as though Mr. Lincoln could have hardly been up and dressed. Mr. Corning had never met Mr. Lincoln up to the meeting at Cooper Union where he had heard his speech and it would seem to be unusual for a railroad president to offer a ten thousand dollar position to a man he had never met.

Mr. Lincoln returned from his speaking tour in New England, and his visit to his son Robert, on Saturday night, March 10, 1860, arriving at the New Haven depot on 27th Street at 11.00 P. M. from Bridgeport, on the train known as the night express. He spent Sunday, March 11th, in New York and attended Plymouth Church, and also went to hear Dr. Chapin. On Monday, March 12th he left New York for the west from the Erie depot, then located at the foot of Duane Street. The General Supt. of the Erie at that time was Charles Minot who had been the first Supt. of the Boston & Maine Railroad and was one of the most progressive railroad officials of his day. It was he who originated the train-order by telegraph in 1851. With Mr. Lincoln's departure from the Duane Street station on March 12th, ended his visit to New York in 1860.

Mr. Lincoln was elected President of the United States on November 6, 1860 and on February 11, 1861 he left Springfield en-route to his most important visit to New York City—and the last he was to make in life. To the man who has been elected to the exalted office of President of the United States, there must be internally, despite his efforts to conceal it, a feeling of vast satisfaction. He has reached the highest goal of human ambition, the greatest gift in the power of the American people to bestow. The opposition newspapers, which during the campaign have been predicting the country going to the dogs if he is elected, bow to the will of the majority, and extend their congratulations and best wishes for the success of his administration, and from whatever section of the country the President-elect may come all Americans gather to cheer him on his way to Washington. This has been the case with all of our Presidents—save one.

At 8.00 A. M. on that historic February 11, 1861 a special train was standing in the depot of the Great Western R. R. (now Wabash) at Springfield. It was a most solemn occasion as Abraham Lincoln stepped to the rear platform and delivered the immortal address of farewell to

his fellow citizens. Already the rumblings of Civil War were in the air and a large part of the nation refused to recognize him as the President-elect. He spoke the truth when he said that he was on the way to assume a "task greater than confronted Washington". At the close of his remarks the Conductor gave the signal and the train was under way. In no journey ever undertaken in this country, or any other, were such vital issues depending, and every mile of it historic.

Out of Springfield Mr. Lincoln's special consisted of one baggage car and passenger coach; the crew were Conductor Walter C. Whitney; Engineer E. H. Fralick; Baggagemaster Platt Williamson, and Brakeman Thomas Ross. The engine was the "L. M. Wiley," built by Hinkley Locomotive Works, Albany St. Boston, Mass. and was a 4-4-0 type 14x22" cyl. 54" driv. and was the 568th engine turned out by the Hinkley works.

Under the name of the present operating company, the journey of President-elect Lincoln from Springfield to Washington was as follows;—

Wabash — Springfield to LaFayette.
Big 4 — LaFayette to Indianapolis.
Big 4—B. & O. — Indianapolis to Cincinnati.
Penna. — Cincinnati to Columbus.
Penna. — Columbus to Pittsburg.
Penna. — Pittsburg to Cleveland.
N. Y. C. — Cleveland to Albany.
D. & H. — Albany to Troy.
N. Y. C. — Troy to 30th Street, New York.
Penna. — New York to Phila.
Penna. — Phila. to Harrisburg and return.
Penna. — Phila. to Baltimore.
B. & O. — Baltimore to Washington.

Mr. Lincoln arrived in Buffalo on Saturday Feb. 16th and stayed there over Sunday. At 5.45 A. M. Monday he pulled out of Buffalo. John Corning was the Conductor. He reached Albany that afternoon and stopped at the historic Delevan House. On the morning of February 19th, on account of high water at Albany Mr. Lincoln's train was detoured via Troy, there being no railroad bridge at Albany at that time. At 10.00 A. M. his special pulled out of East Albany for New York. Stops were made at Hudson, Rhinebeck, Poughkeepsie, Fishkill and Peekskill and at each of these places Mr. Lincoln appeared on the rear platform and made a short speech. From Peekskill the train ran express to New York arriving at the 30th Street station at 3.00 P. M. The following account of Mr. Lincoln's arrival is taken from the New York Tribune for Tuesday, February 19th 1861;—"The new depot of the Hudson River Railroad on 30th Street will be opened for the first time to-day. It is not a very imposing structure though well adapted for the purpose for which it was designed. It is of brick, is 200 feet long by 28 feet in width, with a roof projecting 15 feet over the platform in the rear. There are two entrances in front, one for ladies and one for gentlemen. In the center is the ticket office. At the east end is the ladies sitting room and toilet occupying one third of the building. West of the ticket office is the gentlemens room, telegraph office and baggage

room. Over the ticket office is a spacious refreshment room. Had it not been for the visit of Mr. Lincoln the opening of the depot would have been deferred a few weeks longer, as it is not quite complete, nor has the furniture been put in. It was undergoing a thorough cleaning yesterday, and men were busily engaged in making extensive platforms, so that there may be no lack of room for a handsome reception. A magnificent flag 20 ft. by 14 will be raised on the depot this morning".

Following the reception at the 30th St. station on his arrival, Mr. Lincoln was driven to the Astor House over the following route; up 30th St. to Ninth Avenue, down 9th Ave. to 23rd St. up 23rd St. to Fifth Avenue, down Fifth Avenue to 14th St. up 14th St. to Broadway and down Broadway to the Astor House, where he was assigned Rooms 37, 39, 41 and 43 on the first floor. One of Adams large express wagons carried the baggage of the presidential suite from the 30th Street station to the Astor House. The Police arrangements at 30th Street were in charge of Supt. Kennedy and at the Astor House in charge of Captain Hopkins of the 16th precinct with 200 men.

Supt. Kennedy was later introduced to Mr. Lincoln at the Astor House and thanked for his excellent service. On Mr. Kennedy's replying that he had done but his duty Mr. Lincoln said; "Well, a man ought to be thanked when he has done his duty right well".

Flags were flying from the Hudson River Railroad depot, the Fifth Avenue Hotel and the Everett House in Union Square. The one exception was the historic New York Hotel, located on the west side of Broadway between Washington Place and Waverly Place. This hotel was for years the favorite with southerners and it was only natural, considering the time and place, that there was no demonstration made of Mr. Lincoln's arrival.

The Tribune of February 20th said that President-elect Lincoln's train arrived at the 30th St. station at 3.00 P. M. precisely. Also that the two engines chosen to draw the train containing Mr. Lincoln and suite, have the significant names of "Union" and "Constitution". They are both nearly new, large and powerful, with 16x22" cylinders, wheels 5½ Ft. frame 29x30. The "Union" ran from Albany to Poughkeepsie and the "Constitution" from Poughkeepsie to New York".

On the morning of February 20th the carriages of Mr. Moses H. Grinnell and Mr. William H. Aspinwall called at the Astor House and took Mr. Lincoln and suite to Mr. Grinnell's mansion near the corner of Fifth Avenue and 14th Street. At 11.00 A. M. there was a reception by Mayor Wood at the City Hall. Mr. Lincoln had lunch at the Astor House and then retired until 4.00 P. M. when he received callers. In the evening he attended the Academy of Music to hear Verdi's opera "The Masked Ball".

During his stay at the Astor House Mr. Lincoln met Mr. Hazard, the powder manufacturer of Hazardville, Conn. and smilingly told him to "keep his powder dry"—a statement to which the newspapers attached great significance. He also found time to visit Barnum's Museum, then located at the corner of Broadway and Ann Street, and afterward the site of the New York Herald. On February 21, 1861 Mr.

Lincoln left New York at 8.00 A. M. from foot of Cortlandt St. on the new ferry boat "John P. Jackson" which was decorated in honor of the event. The engine "William Pennington" hauled his special train from Jersey City.

The inauguration of President Lincoln, the firing on Fort Sumter, and the four years of war, are not within the scope of this paper. The great deeds of that mighty struggle are now the common heritage of a united country and the American people to-day look on Grant and Lee, Sherman, Johnson, Sheridan and Stuart, not as great northern or southern generals, but as great American soldiers. All were West Pointers. The morning after Appomattox, when General Grant rode out of the picket line, the first Confederate officers to grasp his hand, were his old classmates. Four years of one of the greatest wars in history had not broken the friendships of West Point.

At a time when the whole nation was rejoicing that peace had come at last, Abraham Lincoln was shot in Ford's theatre by a vile assassin, and every home in the land was in mourning. On the morning of April 24, 1865 the casket of the martyred President arrived in Jersey City and was removed to the ferryboat "New York" which landed at the foot of Desbrosses Street. The body was then taken to the City Hall where it lay in state until the following afternoon, viewed by thousands of mourners. On the afternoon of April 25, 1865 the casket was taken to the Hudson River Depot on 30th Street, where the 7th Regiment was lined up as a Guard of Honor. By a curious coincidence the engine "Union" hauled the special funeral train—the same engine that had hauled the special of the President-elect in 1861. At 4.00 P. M. the funeral train pulled out of the 30th Street station, carrying the body of Abraham Lincoln to Springfield, Illinois and to immortal fame. In the great pageant, Railroads On Parade, there is reproduced the special train of President-elect Lincoln, which left East Albany at 10.00 A. M. February 19, 1861, and the funeral train is reproduced also. These two scenes are among the most dramatic and impressive in the entire pageant.

Mrs. Lincoln was in New York with her husband, in 1857 and 1861. The only mention of her being with him was an article in the New York Tribune of February 19, 1861, in regard to rooms at the Astor House, which said;—"The rooms appropriated for Mr. Lincoln at the Astor House have been brought into requisition on several other great occasions, and have been occupied by several of Mr. Lincoln's predecessors. The rooms are four in number, are all contiguous, and front Broadway. They are up one flight of stairs over the office. Room 37, the most southerly, is designated for Mrs. Lincoln's parlor, and is handsomely furnished; room 39 is the bedroom. Room 41 is large and richly but not ostentatiously furnished, and is well adopted to the purpose of a reception room for Mr. Lincoln. Room 43 is the dining-room."

Mary Todd Lincoln was a high-spirited, beautiful, well educated and intensely ambitious Kentucky girl from one of the best families in Lexington. She met Abraham Lincoln while visiting the home of her sister, Mrs. Edwards, in Springfield. Mary Todd deserves everlasting

gratitude, for she was the first to discover the genius in Abraham Lincoln. Her sister objected to the marriage on the ground that Lincoln was a "plebian", but Mary Todd knew better. She knew, and was clever enough to see, that Lincoln needed but the touch of a woman's hand to smooth the rough edges and arouse his ambition and Abraham Lincoln would go far—and she was right. Abraham Lincoln and Mary Todd were married at Springfield, Illinois, on November 4, 1842. After their marriage she devoted her energies to pushing Lincoln ahead—and she succeeded. Long before anyone else dreamed that Abraham Lincoln would ever occupy the White House, she had her eye on that goal, and she knew if Lincoln reached there, he would fill that exalted position, but even she, clever as she was, did not realize that Abraham Lincoln would live in history as the greatest American excepting Washington.

No mistress of the White House ever faced the difficulties of Mary Todd Lincoln. Social Washington, almost entirely southern in sympathy at that time, was bitterly opposed, not only to her, but to Mr. Lincoln as well. But despite all she had to contend with she was a gracious hostess and great credit is due her for keeping the social life of the White House the same as in time of peace. She was a devoted wife and mother. Early in 1861 when it seemed as though the Confederates would take Washington any day, she refused to leave Mr. Lincoln and seek safety with her children in New York. She was a regular visitor at the military hospitals and donated food and luxuries from the White House kitchen. It was all done quietly, she never mentioned it. During the war she made a number of visits to New York and did a great deal of her shopping at A. T. Stewart's, then located at the corner of Broadway and Chambers Street.

Mary Todd Lincoln had achieved her ambition; yet what an awful price she paid for the occupancy of the White House. Four years of fearful suspense, of days when the fate of the Republic hung in the balance, the death of one of her children and the final tragedy when her husband was shot down at her side. From that shock she never fully recovered. The American people owe a debt that can never be repaid to Mary Todd Lincoln, for she helped, as far as it was possible for a woman to do so, to make Abraham Lincoln, President of the United States. Their last surviving child, Robert Todd Lincoln, President of the Pullman Company from 1897 to 1911, died at Manchester, Vermont. By the terms of his will, the private papers of his father were left to the Library of Congress, to be opened twenty one years after his death. The boxes containing these papers are to be opened on July 26, 1947. And that they will be carefully examined by the leading historians of the nation, there can be no doubt.

As time goes on Abraham Lincoln's fame looms ever greater. President Theodore Roosevelt said, while living in the White House; "I think of Lincoln with his strong, sad, deeply-furrowed face, all the time. I see him in the different rooms and in the halls. For some reason or other he is to me infinitely the most real of the dead Presidents."

The Railway and Locomotive Historical Society does well in placing this tablet, marking the site of the most historic railroad station in New York City, and of the arrival and final departure from there of one of the greatest of Americans.

The inscription on the tablet reads:

On this site stood,
in 1861, the Station of the
Hudson River Railroad
The first passenger to use
it was Abraham Lincoln
who came to New York on
February 19, 1861, on the
way to his inauguration as
President of the United States

His funeral train left
here on April 25, 1865, for
Springfield, Illinois.

This tablet placed February 19, 1941
by the Railway & Locomotive Historical Society.

Fall Brook Railway

By Winfield W. Robinson

To properly understand the circumstances and conditions leading to the development of this system of railroads we must first review the historical facts of the region in the vicinity of Corning, commencing with its settlement shortly after the close of the American Revolution. History tells us that the country was well and favorably known to the soldiers of the four brigades from New England, New York and eastern Pennsylvania comprising the army of General John Sullivan which passed through the Chemung Valley in 1779. Following the close of the war numbers of these former soldiers and other families settled in that valley and a hamlet called Knoxville sprung up on the north side of the river. As time went on more settlers arrived and the region became quite populous. Then came the building of the Chemung Canal.[1]

In 1835 a group of Albany capitalists headed by Erastus Corning, with a view to developing trade generally, especially lumber manufacturing, formed a corporation called The Corning Company and purchased several hundred acres of forest land across the Chemung River from Knoxville and established the village of Corning. The company's attention was then directed to the possibilities of coal from the Tioga Valley and, foreseeing a profitable business in marketing this coal, it made surveys for a railway to the coal regions at Blossburg.[2]

Well over an hundred years ago it was known that Tioga County in Pennsylvania was very rich in semi-bituminous coal and mineral deposits, but there was no adequate means of transporting the products to markets. The Chemung and the Tioga rivers, penetrating to the very heart of the coal regions of Tioga County, seemed to furnish the easiest and cheapest means of transportation. To make water communication available, a company was incorporated by the State of Pennsylvania April 12, 1828 with power to make slack water navigation in the Tioga River from the state line at Lawrenceville to the coal beds near Blossburg or to construct a canal between those points, as should be deemed most advisable. The company was known as the Tioga Navigation Company. April 9, 1828 a like company was incorporated by the State of New York, by the name of the Tioga Coal, Iron, Mining & Manufacturing

[1] The Chemung Canal extended directly east from Corning across country to Horseheads, thence northerly, following Catherine Creek, to Seneca Lake at Watkins. The boats used the lake to its northern outlet where another waterway, the Cayuga & Seneca Canal, connected to the Erie Canal. Thus a through water route was had from Corning to New York City. The Chemung Canal was completed in 1833 and abandoned in 1876.

[2] After the surveys were completed the Corning Company decided that a railway could be constructed from their new village at the head of the Chemung Canal to the coal regions at Blossburg cheaper than a canal could be constructed, and that coal could be brought to their docks on the bank of the Chemung for reshipment in canal boats at less expense by rail than it could be floated down the Tioga River in flat boats or in arks.

Fall Brook Route

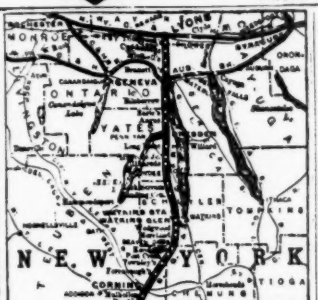
FALL BROOK COAL COMPANY'S RAILWAYS.

GENEVA & LYONS R.R.—SYRACUSE, GENEVA & CORNING RY.—CORNING, COWANESQUE & ANTRIM RY.—PINE CREEK RY.

GEO. J. MAGEE, President.
JOHN LANG, 1st Vice-President and Treasurer.
DANIEL BEACH, 2d Vice-Pres. and Gen. Counsel.
JOHN H. LANG, Secretary and Asst. Treasurer.
E. F. KENDRICK, Traffic Manager.
I. D. LAWTON, Local Freight Agent.
W. H. NORTHROP, Passenger Agent.
WM. NICHOLSON, Auditor.

J. COLLORD, Asst. Auditor.
ANTON HARDT, Chief Engineer.
GEO. R. BROWN, Gen. Superintendent.
K. H. CANFIELD, Asst. Superintendent.
WM. A. FOSTER, Supt. Motive Power & Machinery.
J. B. TERRELL, Car Accountant.
W. H. CHAPMAN, Purchasing Agent.
General Offices—Corning, N. Y.

DIRECT ROUTE TO LAKE KEUKA AND WATKINS GLEN.



FALL BROOK BRANCH.

(To Tioga R.R. from Lawrenceville.)

No. 51	Mls.	*June 1, 1888.*	Mls.	No. 52
12 30 N		lve. **Blossburg** arr.	8	2 40 P.M.
12 45	4	Somerville	4	2 25
1 05 P.M.	8	arr. **Fall Brook** lve.	0	2 00 P.M.

COWANESQUE VALLEY BRANCH.

Connects with Main Line at Lawrenceville.

Stop-over Privileges will be granted on unlimited first class tickets upon application to Conductor in charge.

85	3	1	Mls.	*November 11, 1888.*	8	6	64
A.M.	A.M.	P.M.		[LEAVE] [ARRIVE	A.M.	P.M.	P.M.
8 45	12 00	4 00	0	**Lawrenceville**	8 10	4 42	4 30
8 53	12 08	4 08	3	Nelson	7 47	4 35	4 23
9 03	12 18	4 18	7	Fiklind	7 33	4 25	4 13
9 16	12 31	4 31	12	Otter Ck.	7 20	4 12	4 00
9 25	12 40	4 40	15	Academy Corners	7 14	4 05	3 54
9 40	12 55	4 55	19	Knoxville	7 02	3 50	3 40
9 50	1 05	5 05	23	Cowanesque	6 52	3 40	3 30
10 05	1 20	5 20	29	Westfield	6 38	3 25	3 15
10 15	1 30	5 30	32	Foster Brook	6 28	3 15	3 05
10 25	1 40	5 40	35	Elmer	6 18	3 05	2 55
10 40	1 55	5 55	40	**Harrison Valley**	6 03	2 50	2 40
A.M.	A.M.	P.M.		[ARRIVE] [LEAVE	A.M.	P.M.	P.M.

WELLSBORO AND ANTRIM BRANCH.

Connects with Main Line at Stokesdale Junction.

31	3	25	1	Mls.	*November 11, 1888.*	8	10	6	24
A.M.	A.M.	P.M.	P.M.		[LEAVE] [ARRIVE	A.M.	A.M.	P.M.	P.M.
8 15	11 30	3 30	6 00	0	**Stokesdale Jn.**	7 22	12 15	4 00	5 50
8 18	11 33	3 33	6 03	1	Stokesdale	7 20	12 08	3 57	5 48
8 40	11 55	3 55	6 25	3	Wellsboro	7 00	11 50	3 35	5 25
A.M.	A.M.	P.M.	P.M.		Summit	A.M.	A.M.	P.M.	P.M.
		1 20	4 15		**Antrim**			2 50	
		A.M.			[ARRIVE] [LEAVE			A.M.	

PENN YAN BRANCH.

Connects with Main Line at Dresden.

33	6	25	1	Mls.	*November 11, 1888.*	2	4	6	32
A.M.	A.M.	P.M.	A.M.		[LEAVE] [ARRIVE	A.M.	P.M.	P.M.	A.M.
7 15	7 30	1 30	7 00	0	**Dresden**	8 14	1 18	11 00	
7 42	7 57	1 57	7 31	2	Cascade Mills	8 24	1 06	7 05	10 45
7 48	8 03	2 03	7 38	3	Seneca Mills	8 17	12 57	6 57	10 35
7 58	8 13	2 13	7 48	5	Keuka Mill	8 06	12 47	6 47	10 22
8 05	8 20	2 20	7 55	6	**Penn Yan**	8 00	12 40	6 40	10 18
A.M.	A.M.	P.M.	A.M.		[ARRIVE] [LEAVE	A.M.	P.M.	P.M.	A.M.

* Daily; † daily, except Sunday. ♁ Telegraph stations; ✦ Coupon stations.

CONNECTIONS.—† With New York Central & Hudson River R.R. (direct roads, and West Shore R.R. ‡ With Auburn Branch New York Central & Hudson River R.R. and Geneva, Ithaca & Sayre R.R. § With Northern Central Ry. ‖ With New York, Lake Erie & Western R.R. and Delaware, Lackawanna & Western R.R. ¶ With Tioga R.R. ** With Beech Creek R.R. †† With Philadelphia & Reading R.R., Northern Central Ry., and Philadelphia & Erie Division Pennsylvania R.R. Also at Penn Yan with steamers on Keuka Lake.

Through Cars leaving Elmira 6.10 p.m., via D. L. & W. R.R.

Exp. 3	Exp. 5	Exp. 25	Exp. 1	Mls	*February 17, 1889.*	Acc. 32	Exp. 2	Exp. 8	Exp. 8	Exp. 4
	A.M.	A.M.	A.M.		[LEAVE] [ARRIVE			N'HT		P.M.
	11 30	6 23			**Niagara Falls**			12 05		7 55
	1 00	7 30	A.M.		**Buffalo**		A.M.	11 05		6 30
	5 05	9 40	5 00		**Rochester**		12 00	8 05		3 35
	6 45	9 30	6 00		**Syracuse**		11 30	12 25		1 05
	6 30	10 40	7 05		**Auburn** (via Geneva)		10 40	11 30		12 15
	P.M.	A.M.	A.M.		[LEAVE] [ARRIVE	P.M.	A.M.	P.M.		P.M.
	6 15	10 10	7 15	0	✦....**Lyons** ♁	8 00	9 45	8 30		2 00
	6 21	10 17	7 21	3	....Thompson's ♁	7 53	9 38			1 53
	6 26	10 25	7 30	6	....Cuddebacks ♁	7 46	9 30			1 46
Acc.	6 30	10 28	7 33	9	....Mitchell's ♁	7 43	9 27			1 43
33	6 36	10 33	7 38	12	....Bennett's ♁	7 38	9 23			1 38
A.M.	6 40	10 40	7 45	15	arr....**Geneva** ♁ lve	7 30	9 15	8 45		1 30
7 00	6 50	10 40	7 50	15	lve....**Geneva** ♁ arr	7 30	9 15	8 45		1 30
7 51	6 57	11 27	8 30	20	....Bilsborrow	6 43	8 28			12 43
8 09	7 07	11 38	8 48	24	....Earle's	6 33	8 18	7 00		12 33
8 13	7 10	11 43	8 50	26	....Angus	6 30	8 15			12 30
8 30	7 28	11 58	9 00	29	....Dresden ♁	6 18	8 00	7 30		12 18
A.M.	7 33	12 03	9 07	32	....Long Point	A.M.	7 55			12 13
	7 43	1 04	9 17	36	✦....**Himrod's** ♁		7 45	7 05		12 03
	7 50	1 10	9 26	41	✦....Dundee ♁		7 38	6 58		11 56
	8 05	1 33	9 37	45	✦....Rock Stream ♁		7 23	6 43		11 41
	8 13	1 36	9 45	48	....Reading Centre ♁		7 15	6 35		11 33
	8 17	1 38	9 50	51	✦....Watkin's Station ♁		7 10	6 30		11 28
	8 22	1 42	9 54	52	....Watkin's Glen		7 08	6 28		11 26
	8 27	1 46	9 58	54	....Wedgwood		7 03			11 21
	8 32	1 50	10 05	58	....Newland		6 57	6 18		11 17
	8 40	2 15	10 12	60	....Beaver Dams ♁		6 50	6 13		11 10
	8 45	2 22	10 17	62	....Kendall's		6 45			11 05
Acc.	8 50	2 30	10 21	64	....Post Creek	Acc.	6 40	6 00		11 01
71	8 56	2 40	10 28	67	....Perenbaugh's	90	6 33			10 55
A.M.	P.M.	P.M.	A.M.		arr ✦....**Corning** ♁ lve	P.M.	6 20	5 40	A.M.	10 40
5 30	10 30	P.M.	6 15	10 50	73	lve....**Corning** ♁ arr	6 05	A.M.	5 30	5 50 A.M.
	6 36		6 28	11 08	78	....Mullhollon	5 48		5 58	
	6 43		6 40	11 12	82	....Presho	5 45		6 02	
	6 50		6 50	11 22	85	....Lindley	5 35		6 08	
6 27	7 06		6 58	11 28	88	✦....**Lawrenceville** ♁	5 28		6 13	
	7 22		7 20	11 47	95	✦....Tioga	12 58		6 39	7 54
	7 28		7 28	11 57	99	....Hammond	12 48			7 45
	7 39		7 38	12 05	102	....Holiday	12 38		6 58	7 37
	7 44		7 43	12 10	104	....Middlebury	12 32		7 04	7 31
	7 47		7 47	12 13	106	....Niles Valley	12 28		7 11	7 28
7 50	7 53		7 56	12 20	108	arr....**Stokesdale Jn.** lve	12 20		7 20	7 20
7 55	P.M.		8 00	12 25	108	lve....**Stokesdale Jn.** arr	12 05		6 00	A.M.
			8 11	12 35	113	....Marsh Creek	11 47			
8 25			8 22	12 40	116	✦....Ansonia ♁	11 37		8 48	
			8 44	1 10	124	....Tiadaghton	11 07			
9 25			7 50	1 48	133	✦....Blackwell's ♁	10 30		8 57	
9 41			7 33	2 05	138	✦....Cedar Run ♁	10 28		8 57	
10 10			7 47	2 08	143	....Slate Run	10 05		8 48	
			7 54	2 14	145	....Utceter	9 56			
10 37			8 02	2 22	149	....Cammal ♁	9 43		8 21	
10 53			8 14	2 35	153	....Jerry Hill	9 26		8 11	
11 14	Exp. 39	Exp. 19	8 38	2 47	158	....Waterville ♁	9 10		8 11	
	P.M.	A.M.	A.M.		[LEAVE] [ARRIVE	A.M.	P.M.	P.M.		P.M.
	12 35	8 05	12 35	6 25	247	**Shamokin**	5 15		10 34		9 18
	1 00	8 21	3 00	P.M.		**Pottsville**	4 50				8 55
	4 23	8 50	4 23			**Reading**	4 20		7 10		8 40
	4 40	8 50	6 40		386	**Philadelphia**	11 30		4 15		9 45
	A.M.	P.M.	A.M.		[ARRIVE] [LEAVE	P.M.		A.M.		A.M.

Through Cars to Elmira.

To Lake Haven and Philipsburg, C. R. R.

From Wellsboro.

Runs to Wellsboro.

Corning, Cowanesque & Antrim Division.

Syracuse, Geneva & Corning Division.

—Courtesy Clarence Roberts.

Map and Timetable, Fall Brook Railway—1889

Company, having for its declared objects the digging and vending of coal, manufacturing of iron, mining and working ores and manufacturing glass and other articles. This company was also authorized to construct slack water navigation from the Pennsylvania state line down the Tioga River, or to construct a canal between the same points, as it should elect. This was the day of canals, or the "canal era" so-called, in which so many canals were projected and constructed in New York and Pennsylvania.

Upon examination, however, it was found that the construction of slack water navigation in the Tioga River was not practicable, or at least too expensive to warrant the outlay of the amount of money required. Subsequently, in 1833, by acts of the Legislature of the respective states, the companies were authorized to construct railways along the Tioga River between Blossburg and Corning. After several years of financial tribulation the roads were finally built, the one in New York by The Corning Company and the one in Pennsylvania by Philadelphia capitalists, laid with wooden rails upon which were fastened strips of strap iron. They were completed in 1839.[3] The road from Corning to the state line at Lawrenceville was 15.64 miles and the one from the state line to Blossburg was 25.5 miles. The two lines passed through various vicissitudes and changes of name. The Tioga Navigation Company became the Tioga Rail Road Company,[4] and the Tioga Coal, Iron,

[3] The railroad was cheaply built. To avoid the expense of making fills and digging cuts the roadbed extended along the base of hills, making many turns in order to preserve grade, and where it was necessary to cross flat lands of a lower level timber trestles and driven Spiles were used to support the cross ties, timber stringers and rails of strap iron that composed the railroad proper.

The railroad began business in 1839. Its only locomotive, a small affair, manufactured at Albany, N. Y., was brought to Corning on a canal boat. The passenger and freight cars were made in Corning. For a time this train had absolute right of way, under any and all circumstances, whether going or coming, for there was but the one locomotive. When a second locomotive was secured, trains were run by guess when off schedule, for there was no telegraph service. Much steam was used in tooting the high-keyed whistles of goodly size, as the cautious engineer felt his way on approaching a sharp curve or rounding a point of land that hid from his view a stretch of track ahead. Reverse curves and intervening points of hills and mountains were too numerous to mention. It was the practice of an engineer to move with caution on nearing a curve where the view ahead was obstructed and then "let 'er out" on the straight stretches, the condition of the track permitting. Until the summer of 1864, when a telegraph wire was strung along the right of way the time tables gave a train headed north for Corning the right of way when a train moving in the other direction was ten minutes late at a regular passing place. It was the duty of an engineer of a southbound train to side-track at any convenient switch when he lost the "right of way" and wait for the northbound train to pass. This might be a matter of only a few minutes, or of hours, or until a "runner" or a party of track men pumping a hand car brought orders.

[4] The Tioga Navigation Company was reorganized as the Tioga Rail Road Company in 1851. The following year the road was rebuilt from Blossburg to Lawrenceville and relaid with T rail. Levi H. Shattuck, agent for the New Jersey Central at Easton, Pa., was appointed Superintendent of the Tioga December 31, 1852. Under the charter of the Elmira State Line Railroad Company, incorporated April 21, 1872, the Tioga Rail Road constructed a new line from a point near Lawrenceville, called Tioga Junction, to the southerly end of the city of Elmira,

Mining & Manufacturing Company became the Corning & Blossburg Rail Road Company, and this is the one we are interested in in this article, as it was the first road of what later developed into the Fall Brook Railway system. The companies and the parties operating their roads engaged in varying success in the business of transporting the products of the mines to market, but the market was limited to a small quantity of coal and the business was far from remunerative.

By an act of the New York State Legislature passed April 5, 1851 entitled "An Act to authorize the Tioga Coal, Iron, Mining & Manufacturing Company to borrow money to relay its road with a heavy T rail and to consolidate with the Tioga Rail Road Company[5] and to change the name of the said company to the Corning & Blossburg Railroad Company," it would seem that John Magee of Bath, N. Y., first enters the scene in this undertaking. In that year he seems to have purchased a controlling interest in the Corning & Blossburg and was instrumental in the rebuilding of the line from Lawrenceville to Corning, making many necessary improvements and placing it in first-class condition.

March 19, 1854 the Corning & Blossburg was reorganized, after foreclosure sale, as the Blossburg & Corning Railroad Company. The purchase price was reported as $250,000, the original cost of the road being shown in the records as $582,376.

In 1856 Mr. Magee's eldest son, Duncan, engaged with him in the business of manufacturing lumber in Tioga County and also in mining coal from the old mines at Blossburg and in shipping it to Corning for

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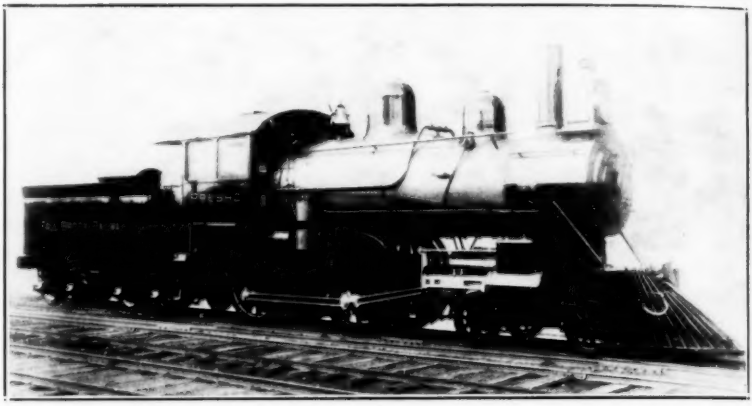
called Elmira Junction, where a connection was had with the Northern Central Railway. This was completed in October 1876. At the same time the Tioga people constructed southwesterly from Blossburg to Arnot. This gave the company a main line from Arnot to Elmira of 51 miles. That portion of the original line from Tioga Junction to Lawrenceville became merely a three mile branch. The property was then consolidated as the Tioga & Elmira State Line Railroad Company. Late in 1882 it went to the New York, Lake Erie & Western by stock control and now forms a part of the Erie system.

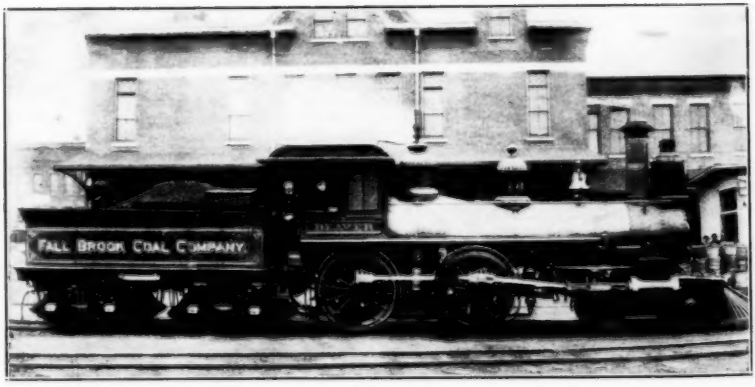
[5] This proposed consolidation never materialized, but the two roads were operated jointly, practically as one property, each with trackage rights over the other, for quite a number of years. This was a continuation of the practice which had been in vogue since the original opening in 1839. I have seen a number of old public and employee time tables from the early days up to and including the year 1871. All these time tables have the names of both railroads at the top. For instance, one reads "Corning & Blossburg and Tioga Rail Roads", another reads "Tioga and Corning & Blossburg Rail Roads", while still a third reads "Blossburg & Corning and Tioga Rail Roads." They show two mixed passenger and three coal trains daily in each direction between Corning and Blossburg, with one superintendent, Levi H. Shattuck, for both roads. He apparently supervised both roads until the appointment of Alonzo H. Gorton as superintendent of the Blossburg & Corning in 1864. The later issues of time tables show Mr. Shattuck as superintendent of the Tioga and Mr. Gorton as superintendent of the Blossburg & Corning. From the old records I have inspected it appears that this joint operation and trackage arrangement continued until along in the early eighties.

Mr. Gorton was born in the township of Corning in 1828, a son of Samuel Gorton and grandson of Rufus Gorton, one of the pioneer settlers of that region. He learned the trade of carpenter, became a pattern maker and advanced to foreman of car building in the Fall Brook shops. He then became superintendent and served as such until his death in Corning April 26, 1886.



—Courtesy R. C. Schmid

Fall Brook #10, "Presho"—Schenectady, 1894.



—Courtesy R. C. Schmid

Fall Brook # 18, "Beaver"—Brooks, 1873.

marketing over the canal. The prospect for an increasing market for coal led to explorations for more coal in the mountains and in the purchase of six thousand acres of coal lands in and around Fall Brook Borough in the township of Ward, Tioga County.

John Magee with his son Duncan S. Magee and one James H. Gulick thereupon formed the Fall Brook Coal Company which was chartered by the State of Pennsylvania April 7, 1859, and which granted authority, in addition to other privileges, to build seven miles of private railroad to transport their coal from the mines at Fall Brook to the Tioga railroad at Blossburg. This private railroad, later called the Fall Brook branch, was completed late in 1859.

A line of telegraph was installed in 1864 which was owned jointly by the Blossburg & Corning and the Tioga railroads and George R. Brown[6] was appointed Superintendent of Telegraph May 16, 1867. In later years this telegraph system was incorporated as the "Corning, Cowanesque & Antrim and Tioga Railroad Telegraph Company."

The Erie railroad had been opened to Corning in December 1849, but it was not until July 1865 that a switch was installed making a connection with that railroad. Coal was then taken to Horseheads over the Erie and then over the Northern Central to Watkins to be loaded there on the canal boats. Such arrangements for shipping were necessitated by the failure of the state to properly maintain the Chemung Canal. The Blossburg & Corning had trackage rights over the Erie and the Northern Central and ran their coal trains, four daily, through from the mines to the lake front. At a place called Coal Point about a mile north of Watkins the company built piers, basins, slips, trestle work, etc., for the handling of coal. This continued until the latter part of the year 1877.

In 1868 the Fall Brook Coal Company leased the Blossburg & Corning railroad, and in the same year, upon the death of his father, Duncan S. Magee became president of the company.

In 1870 the Fall Brook Coal Company began construction of an extension from Lawrenceville to Antrim, 37½ miles, to reach some new coal fields. This was built under the charter of the Wellsboro & Law-

[6] Mr. Brown was born in Chemung County in 1840 and commenced life as a country school teacher. In 1863 he went to the Fall Brook Coal Company as a telegraph operator, and the following year was advanced to train dispatcher, combining those duties with his position of Sup't. of Telegraph. Upon the death of Mr. Gorton he was appointed superintendent of the road and with the completion of the extensions he became general superintendent. When the New York Central took over the Fall Brook Railway in 1899 all officials of the latter company were replaced and Mr. Brown went to the New York & Pennsylvania Railway at Canisteo as General Manager. He died November 4, 1916 in a hospital in Rochester, N. Y. Throughout the railroad world Mr. Brown is credited with being the official who first instituted the principle of demerit marks as a punishment for infractions of the rules, in place of the general practice of suspending or fining an employee. As a disciplinary measure Mr. Brown would assess a man's record with a certain number of demerits. In the slang among the railroad men these demerits came to be known as "brownies", named after Mr. Brown. This system of discipline has been adopted by many railroads in the past fifty years and among the employes the demerits are still referred to as "brownies".

renceville Railroad Company, incorporated April 4, 1867, and was one of John Magee's plans for building up his company. The line followed the west branch of the Tioga River in a southerly direction, passing through Stokesdale and Wellsboro. It was completed in 1872 and immediately leased to the Fall Brook Coal Company. This gave a continuous line from Corning to Antrim of fifty-three miles.

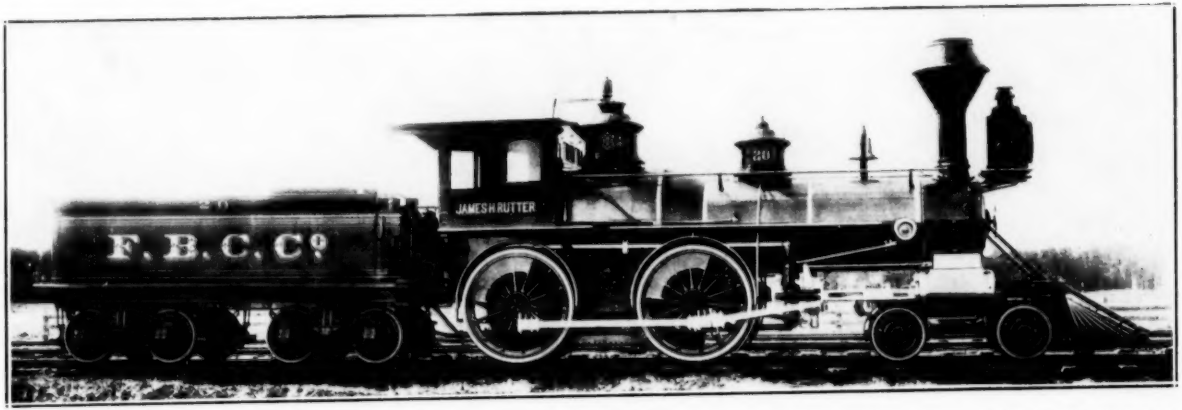
January 1, 1873 the Blossburg & Corning and the Wellsboro & Lawrenceville were consolidated under the name of the Corning, Cowanesque & Antrim Railway Company and leased to the Fall Brook Coal Company.

The Cowanesque Valley Railroad, incorporated April 9, 1869, from Lawrenceville to Elkland, twelve miles, was completed and opened for traffic on September 15, 1873. Construction of this road was financed largely by the Fall Brook Coal Company. June 1, 1874 it was purchased by the Corning, Cowanesque & Antrim. In 1882 this branch was extended to Mills, Pa., and in later years to Ulysses, making its length forty miles. At Ulysses connection was made with the Buffalo & Susquehanna and the Coudersport & Port Allegheny railroads.

In the middle seventies the Fall Brook people, for some reason or other, decided to discontinue the shipping of coal by water and to make a connection with the New York Central so that it could be marketed by rail. Accordingly, plans were laid for a northern extension. This was accomplished under the charter of the Syracuse, Geneva & Corning Railway Company, dated August 27, 1875, extending from Corning to Geneva, fifty-eight miles, with a branch of seven miles from Dresden to Penn Yan, which branch was constructed under the charter of the Penn Yan & New York Railroad Company (organized August 24, 1877 and consolidated with the Syracuse, Geneva & Corning October 1, 1885.) With the opening of this northern extension, December 10, 1877, the first train ran through from Corning to Lyons. It was then leased to the Fall Brook Coal Company and this lease also included a line from Geneva to Lyons, fifteen miles.[7]

Another plan of the Fall Brook people was to reach the coal roads of the Upper Susquehanna Valley. This was accomplished by the purchase of the charter of the Jersey Shore, Pine Creek & Buffalo Railway Company, incorporated February 17, 1870, and the construction of the road from Stokesdale Junction (three miles north of Wellsboro) to Ansonia, thence southeasterly along Pine Creek to Jersey Shore, connecting there with a soft coal road which later became the Beach Creek, and then on to Williamsport, following the west branch of the Susquehanna River, an entire distance of seventy-eight miles. At Williamsport a connection was made with the Philadelphia & Reading from which the new line received hard coal. Upon the completion of this southern extension it was leased to the Fall Brook Coal Company as of June 30, 1883, and by a decree of the Court of Common Pleas of Tioga County February 6, 1884 the name was changed from Jersey Shore, Pine Creek

[7] The Geneva & Lyons Railroad Company was organized as of October 5, 1877, was constructed and owned by the New York Central & Hudson River Railroad Company.



—Courtesy R. C. Schmid

Fall Brook #20 "James H. Rutter"—Schenectady, 1878.

& Buffalo to the Pine Creek Railway Company. The first train ran through from Corning to Williamsport May 21, 1883.

It is said that the New York Central people furnished a large portion of the money for the construction of the Syracuse, Geneva & Corning and the Pine Creek railways, and this undoubtedly accounts for the fact that so many New York Central officials were members of the Boards of Directors of these two railways.

None of the Fall Brook's leased railway lines owned any rolling stock of its own. All the engines, cars, etc., were owned by the Fall Brook Coal Company. The stationery, time tables, printed forms, etc., all bore the name of the "Fall Brook Coal Company's Railways."

The company's lines which had been built in the early days were all broad gauge, six feet. When the northern and southern extensions were constructed in the seventies they were made standard gauge. In 1878 the entire line was made standard. The broad gauge locomotives were altered in the company's shops at Corning and most of them received new boilers, which were longer and more narrow than the old boilers.

When John Magee first laid the foundations of this company his theory was that the railroad interest and the coal enterprise were mutually dependent upon each other and from the first they were operated in harmony, the Fall Brook Coal Company being the operator of the railways under a contract of lease. Either this did not hold true with his successors or changed conditions made it advisable to depart from this policy. Be that as it may, the railway department and the coal enterprise were divorced by the formation, on July 1, 1892 of the Fall Brook Railway Company as successor to the Corning, Cowanesque & Antrim, the new company assuming the leases of the Pine Creek, the Syracuse, Geneva & Corning and the Geneva & Lyons railroads. Its mileage at that time is given as follows:

Main line, Lyons to Williamsport	186 miles
Cowanesque branch, Lawrenceville to Ulysses	40 miles
Antrim branch, Stokesdale Jct. to Antrim	17 miles
Penn Yan branch, Dresden to Penn Yan	7 miles
Fall Brook branch, Blossburg to Fall Brook	7 miles
Total	257 miles

The officers of the Fall Brook Railway were: George J. Magee, president; John Magee (3rd) vice president; John Lang, treasurer and secretary; Daniel Beach, general counsel; George R. Brown, general superintendent; Robert H. Canfield, chief engineer. At Corning the company owned a large brick building (completed in April 1881) which held the depot, baggage department, etc., on the first floor, while on the second floor were the executive, operating and general offices.

Looking back at the scene now after a period of fifty years it would seem that the separation of the railway from the coal operations could very well have been a step to pave the way for complete control by the New York Central, inasmuch as that company was heavily interested financially.

May 1, 1899 the Fall Brook Railway was leased to the New York Central & Hudson River Railroad Company for a period of 999 years, the latter company assuming all the leases. At the time this transaction was made it is said that there was a provision in the Magee estate to the effect that the railway could not be sold during the life time of certain heirs. When this prohibition expired the property was purchased by the New York Central and reorganized, as of April 12, 1907, as the Geneva, Corning & Southern Railroad Company, being a consolidation of the Fall Brook, the Syracuse, Geneva & Corning and the Pine Creek railways. The new incorporation was merged into the parent company October 29, 1914 and the entire line is now operated as a part of the Pennsylvania Division of the New York Central System.

The principal traffic is and always has been coal with a small volume of miscellaneous freight. Passenger business never was profitable and is now discontinued. The little Fall Brook branch which was left stranded by itself down in Ward township was abandoned a number of years ago, and the western portion of the Cowanesque branch, Westfield to Ulysses, fifteen miles, has also been taken up.

Biographical sketches of the most prominent persons mentioned in this narrative:

Erastus Corning was born in Norwich, Connecticut, December 14, 1794. In 1814 he removed to Albany and engaged in mercantile pursuits. Upon inheriting the property of a wealthy uncle he established the hardware house of Erastus Corning & Co., and also acquired a large interest in the Albany Iron Works which, under his management, became one of the largest industrial establishments in the United States. He then entered banking and became interested in the development of railroad systems in New York State. He was president of the Albany & Schenectady railroad and was the master mind in the consolidation which formed the New York Central & Hudson River Railroad Company, and was president of that corporation twelve years. He was three times elected to Congress. He died in Albany April 9, 1872.

John Magee, the first of that name, was born in the Irish Settlement near Easton, Penna., September 3, 1794. His parents, Henry and Sarah (Mulhollon) Magee had emigrated from the County Antrim, Ireland, in 1784. While John was still a child the family removed to Groveland, Livingston County, N. Y., and engaged in farming, where the mother died October 12, 1805. The father and children went to Michigan in 1808, settling near Detroit. John enlisted in the U. S. Army at Detroit in May 1812, became a prisoner of war with the surrender of General Hull's army to General Brock, and was confined at St. Catherines. Upon his release he re-enlisted at Niagara and at the Battle of Beaver Dams he was taken prisoner by the British and Canadian forces. This time he escaped and rejoined his command. Upon his discharge at the termination of the war he walked from Niagara to Bath, N. Y., where he secured employment cutting wood and working on a farm. In 1818 he was appointed constable of the township of Bath; in 1819 a deputy sheriff of the county of Steuben; in 1820 marshal for

the county to take the census. January 6, 1820 he married Sarah McBurney of Bath, daughter of the county judge. She died May 15, 1828, leaving no children. In 1821 Mr. Magee was appointed High Sheriff and served until 1825. The following year he was elected to Congress and was twice thereafter re-elected. In Washington, on February 22, 1831, he married Arabella Steuart. She was the mother of ten children, four of whom survived upon her death at Watkins May 16, 1864.

In 1831 the Steuben County Bank was established at Bath and Mr. Magee was chosen its first president, which position he held until his death, a period of thirty-seven years.

During the twenty years from 1831 to 1851, prior to the time when he became more directly interested in enterprises in Tioga County, Mr. Magee was actively engaged with the banking business at Bath and in many public enterprises of the day in that section. For several years commencing in 1840 he was general contractor for the construction of the Erie railroad between Binghamton and Corning. Following this he was president of the Conhocton Valley railroad while it was being built from Corning to Attica.

In 1864 Mr. Magee removed from Bath to Watkins where he died April 5, 1868.

Duncan S. Magee. He was the eldest son of John (1st) and Arabella (Steuart) Magee and was born at Bath, November 21, 1831. He married Catherine E. Gansevoort in 1853. All his life he was associated with his father in the various enterprises of the family and succeeded to the presidency of the companies upon his father's death. Duncan suffered ill health and made a trip abroad with the hope of improving it, but died May 8, 1869 in his thirty-eighth year.

James H. Gulick was a Pennsylvanian who located in Blossburg in 1837 and resided there thirty-eight years. He was engaged in coal operations and glass manufacture in the Tioga Valley and was associated with the Magees in the organization of the Fall Brook Coal Company. He removed to Williamsport in the late seventies and died there in 1881.

George J. Magee. Son of John (1st) and Arabella (Steuart) Magee and was born at Bath, March 17, 1840. He graduated from Princeton College in 1860 and commenced his business career in the Steuben County Bank at Bath. In 1865 he married Emma Stothoff of Burdett, N. Y. After a short period in the Bath bank he became associated with his father and brother Duncan in the Fall Brook enterprises, succeeding to the presidency of the companies upon Duncan's death. Mr. Magee was always addressed and referred to as General Magee, he having served on the military staff of Governor Horatio Seymour of New York as a Brigadier General. General Magee died in Nice, France, March 11, 1897.

John Magee (3rd) was born at Watkins December 2, 1867, the son of George J., and Emma (Stothoff) Magee. He attended the academy at Lawrenceville, New Jersey, and completed his education in Europe. With the Fall Brook company he commenced work at the bottom of the ladder, being employed in the coal industry at Antrim, in the shops at Corning and spent several months in the Schenectady Locomotive Works

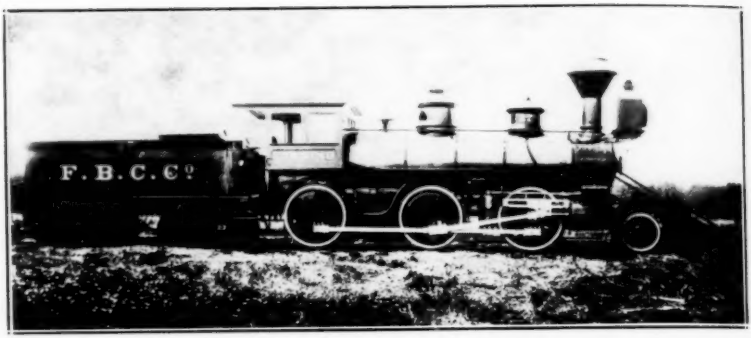
to familiarize himself with engines. Later he became secretary of the Fall Brook interests and was named as president in 1897 at his father's death. November 4, 1891 he married Florence Wetmore Seeley of Elmira. He was appointed an aide-de-camp on the military staff of Governor Roswell P. Flower with the rank of Colonel in the New York National Guard, and served as such from 1892 to 1895. Upon the lease of the Fall Brook Railway to the New York Central, Colonel Magee continued as president of the Fall Brook Coal Company. He is now retired from business and resides at Pebble Beach, California.

John Graham, born in 1807, was the first Chief Engineer of Motive Power of the Corning & Blossburg railroad. He was locomotive engineer of the first train from Blossburg to Corning on November 5, 1839. He died September 15, 1841, aged thirty-four years.

In closing I would like to mention the following two former officials of the Fall Brook Railway who are still living in Corning:

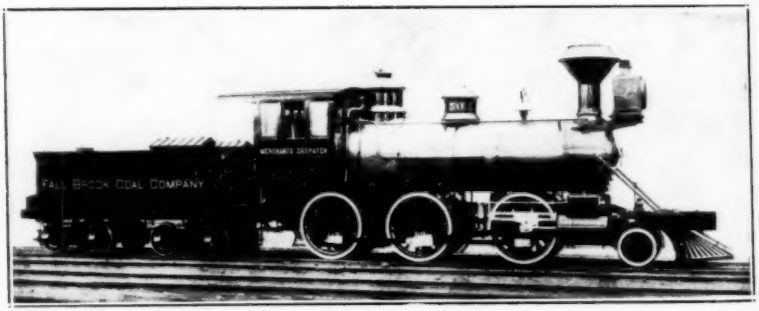
Cyrus D. Sill, born in Corning April 23, 1870, the son of Cyrus D., and Mary A. (Bourne) Sill. Educated in the high school of his native city he first entered the employ of the Fall Brook company as clerk in the ticket office at the Corning depot in April 1888. Later he was promoted to a clerical position in the Auditor's office. April 1, 1893 he was assigned to a position in the Treasurer's office as a joint employee of the Fall Brook Coal Company and the Fall Brook Railway where he remained until the road was taken over by the New York Central. He then went with the Fall Brook Coal Company and became secretary and treasurer. In 1925, in partnership with William J. Howell of Antrim, Pa., Mr. Sill leased the mines of the Fall Brook Coal Company under the name of Howell & Sill. The partners acquired ownership of the entire capital stock of the coal company in 1930, since which time Mr. Sill has been president of the Fall Brook Coal Company.

Robert H. Canfield was born May 25, 1851 at Geneva, N. Y. His parents were Caleb A., and Sarah (Withington) Canfield. He was educated in the schools at Bath, N. Y., and his first employment was with his father, June 1, 1869, in locating and building the railroad between Dansville and Mount Morris, N. Y., then known as the Erie & Genesee Valley, now the Dansville & Mount Morris. From 1870-71 he was on the construction of the Sodus Point & Southern railroad, later the Northern Central, from Stanley to Sodus Point, N. Y.; 1873-74, Division Engineer, N. Y. C. & H. R. R. R., on the construction of two additional tracks from Syracuse to Lock Haven, N. Y.; 1875-77, Surveying, locating and constructing the Syracuse, Geneva & Corning railroad; 1882-83, Principal Assistant Engineer of the Pine Creek Railway; 1884, survey and construction on the branch from Dresden to Penn Yan, N. Y.; June 1, 1886 appointed chief engineer of the Fall Brook Railway with the title of Assistant Superintendent, which position he held until the road was leased to the New York Central. Mr. Canfield is now engineer in charge of building construction of the Corning Glass Works.



—Courtesy R. C. Schmid

Fall Brook #27, "Corning"—Schenectady, 1882.



—Courtesy R. C. Schmid

Fall Brook #50, "Merchants Despatch"—Schenectady, 1884.

Your Editor, after a careful search and with the help of the American Locomotive Co., and the author of this article, Captain Robinson, has arranged a roster of Fall Brook Ry. locomotives which he believes is as complete as can be produced at this late day. Due to the original nature of the road, absence of corporation records and the fact that it was controlled by one family for a number of years, there are still locomotives about which we know only the names and if any of our members can assist us, we will gladly welcome this additional information.

1	Chemung	Albany Iron Works		1839	A small affair, manufactured at Albany and brought to Corning on a canal boat. First trip Nov. 5, 1839.				
1	Fall Brook	No data							
2	Tuscarora	Rogers	# 29	1841	4-4-0	12x18"	48"		
2	Seymour	No data							
3	Conhocton	Baldwin	# 150	1841	4-4-0	12x16"	54"		
3	Tioga	Schenectady	#1265	1880	4-6-0	18x24"	54"		
4	Benjamin	Baldwin	# 131	1839					
4	Ulysses	Schenectady	#4125	1893	4-4-0	18x24"	68"	NYC	# 706
5	Jonathan	Baldwin	# 159	1840					
5	Columbus	Schenectady	#4126	1893	4-4-0	18x24"	68"	NYC	# 707
6	Susquehanna	Baldwin	# 287	1847	0-6-0	13x18"	42"	Rebuilt	
		Corning Shop		1860	4-4-0	Tank engine			
6	Paul	Schenectady	.....	1893	4-4-0	18x24"	68"	NYC	# 708
7	Lark	No data			4-4-0				
7	Interstate	Schenectady	#2238	1888	4-4-0	18x24"	57"		
8	Schuyler	No data			2-6-0				
8	Pritchard	Schenectady	#4236	1894	4-4-0	19x24"	56"	NYC	# 709
9	Wedgewood	Schenectady	# 302	1863	4-4-0	16x24"	54"		
9	Not Named	Schenectady	#4540	1897	4-4-0	20x24"	69"	NYC	# 710
10	Chemung	Schenectady	# 419	1866	4-4-0	17¾x24"	64½"		
10	Presho	Schenectady	#4237	1894	4-4-0	19x24"	69"	NYC	# 711
11	Linden	No data							
11	Not Named	Schenectady	#4541	1897	4-4-0	20x24"	69"	NYC	# 712
12	Steuben	Schenectady	# 880	1873	4-6-0	18x24"	54"		
13	Sam Patch	Schenectady	# 883	1873	4-6-0	18x24"	54"		
14	Antrim	Schenectady	# 964	1874	4-6-0	18x24"	54"		
15	Lawrenceville	No data							
16	J. P. Haskin	Schenectady	#2001	1885	2-6-0	18x24"	56"		
17	W. S. Nearing	Schenectady	#2002	1885	2-6-0	18x24"	56"		
18	Beaver	Brooks	.....	1873	4-4-0	16x24"			
19	Dundee	Schenectady	#1078	1877	4-4-0	17x24"	60"		
20	Jas. H. Rutter	Schenectady	#1086	1878	4-4-0	17x24"	60"	NYC	# 714
21	Yates	Schenectady	#1118	1879	4-4-0	17x24"	60"		
22	Ontario	Rogers	#2271	1873	2-6-0	17x24"	50"		
23	Wayne	Schenectady	#1271	1880	4-6-0	18x24"	54"		
24	New York	Schenectady	#1341	1881	4-4-0	17x24"	60"	NYC	# 713
25	Pennsylvania	Schenectady	#1372	1881	4-4-0	18x24"	54"		
26	Reading	Schenectady	.....	.....	2-6-0	18x24"	55"		
		Rebuilt		1885				NYC	#1844
27	Corning	Schenectady	#1578	1882	2-6-0	18x24"	55"	NYC	#1845
28	Geneva	Schenectady	#1579	1882	2-6-0	18x24"	55"		
29	Morris Run	Schenectady	#1677	1883	2-8-0	20x24"	50"	NYC	#2265
30	Blossburg	Schenectady	#1678	1883	2-8-0	20x24"	50"	NYC	#2266
31	Wellsboro	Schenectady	#1679	1883	2-8-0	20x24"	50"	NYC	#2267
32	Stokesdale	Schenectady	#1680	1883	2-8-0	20x24"	50"	NYC	#2268
33	Middlebury	Schenectady	#1681	1883	2-8-0	20x24"	50"	NYC	#2269
34	Lathrop Elkland	Schenectady	#1682	1883	2-8-0	20x24"	50"	Renamed	

34	Nelson	Schenectady	#2546	1888	2-8-0	20x24"	50"	Re 77	
35	Osceola	Schenectady	#1683	1883	2-8-0	20x24"	50"	NYC	#2270
36	Westfield	Schenectady	#1684	1883	2-8-0	20x24"	50"	NYC	#2271
37	Knoxville	Schenectady	#1685	1883	2-8-0	20x24"	50"	NYC	#2272
38	Lindley	Schenectady	#1686	1883	2-8-0	20x24"	50"	NYC	#2273
39	Pine Creek) Morrisbury)	Schenectady	#1687	1883	2-8-0	20x24"	50"	NYC	#2274
40	Susquehanna	Schenectady	#1688	1883	2-8-0	20x24"	50"	NYC	#2275
41	Lycoming	Schenectady	#1689	1883	2-8-0	20x24"	50"	NYC	#2276
42	Williamsport	Schenectady	#1690	1883	2-8-0	20x24"	50"	NYC	#2277
43	Jersey Shore	Schenectady	#1691	1883	2-8-0	20x24"	50"	NYC	#2278
44	Potter	Baldwin	#1730	1868	2-6-0	15x18"	42"		
45	Mulhollon	Baldwin	# 772	1857	4-4-0	13x24"	60"		
46	Blue Line	Schenectady	#1872	1884	2-6-0	19x24"	58"	NYC	#1846
47	White Line	Schenectady	#1873	1884	2-6-0	19x24"	58"	NYC	#1847
48	Red Line	Schenectady	#1874	1884	2-6-0	19x24"	58"	NYC	#1848
49	Nickle Plate	Schenectady	#1875	1884	2-6-0	19x24"	58"	NYC	#1849
50	Merchants Despatch	Schenectady	#1876	1884	2-6-0	19x24"	58"	NYC	#1850
51	Watkins	Schenectady	#1942	1885	2-6-0	19x24"	58"	NYC	#1851
52	Himrods	Schenectady	#1943	1885	2-6-0	19x24"	58"	NYC	#1852
53	Dresden	Schenectady	#1944	1885	2-6-0	19x24"	58"	NYC	#1853
54	Lyons	Schenectady	#1945	1885	2-6-0	19x24"	58"	NYC	#1854
55	Penn Yan	Schenectady	#1946	1885	2-6-0	19x24"	58"	NYC	#1855
56	Cowanesque	Schenectady	#2004	1885	2-6-0	19x24"	58"	NYC	#1856
57	Post Creek	Schenectady	#2132	1886	2-6-0	19x24"	58"	NYC	#1857
58	Rock Stream	Schenectady	#2133	1886	2-6-0	19x24"	58"	NYC	#1858
59	Slate Run	Schenectady	#2547	1888	2-8-0	20x24"	50"	NYC	#2279
60	Newberry	Schenectady	#2548	1888	2-8-0	20x24"	50"	NYC	#2280
61	Keuka	Schenectady	#2725	1889	2-8-0	20x24"	50"	NYC	#2281
62	Cedar	Schenectady	#2805	1889	2-8-0	20x24"	50"	NYC	#2282
63	Lathrop	Schenectady	#2992	1890	2-8-0	20x24"	50"	NYC	#2283
64	Gammal	Schenectady	#2993	1890	2-8-0	20x24"	50"	NYC	#2284
65	Ansonia	Schenectady	#2994	1890	2-8-0	20x24"	50"	NYC	#2285
66	D. S. E.	Schenectady	#3051	1890	2-8-0	20x24"	50"	NYC	#2286
67	J. M. E.	Schenectady	#3052	1890	2-8-0	20x24"	50"	NYC	#2287
68	Junior	Schenectady	#3053	1890	2-8-0	20x24"	50"	NYC	#2288
69	Southern Tier	Schenectady	#3534	1891	2-8-0	20x24"	50"	NYC	#2289
70	Northern Tier	Schenectady	#3535	1891	2-8-0	20x24"	50"	NYC	#2290
71	Tiadaghion	Schenectady	#3683	1892	2-8-0	20x24"	50"	NYC	#2291
72	Blackwells	Schenectady	#3684	1892	2-8-0	20x24"	50"	NYC	#2292
73	Harrison	Schenectady	#3685	1892	2-8-0	20x24"	50"	NYC	#2293
74	Cascade	Schenectady	#3757	1892	2-8-0	20x24"	50"	NYC	#2294
75	Moreland	Schenectady	#3758	1892	2-8-0	20x24"	50"	NYC	#2295
76	Roundtop	Schenectady	#3759	1892	2-8-0	20x24"	50"	NYC	#2296
77	Nelson	Schenectady	#2546	1888	2-8-0	20x24"	50"	NYC	#2297
78	Holiday	Schenectady	#4233	1894	2-8-0	20x24"	50"	NYC	#2298
79	Earle	Schenectady	#4234	1894	2-8-0	20x24"	50"	NYC	#2299
80	Waterville	Schenectady	#4235	1894	2-8-0	20x24"	50"	NYC	#2300
81	Not Named	Schenectady	#4395	1895	2-8-0	20x24"	50"	NYC	#2301
—	John	Corning Shop		1890	4-2-2	Inspection Engine			

Comments on the above may not be amiss.

Photographs of the "Beaver" indicate this engine to be a Brooks engine and to resemble one of those that were delivered to the U. S. Rolling Stock Co. In a letter addressed to Capt. Robinson, Mr. John Magee states there were other Brooks engines on the road. It would

not be impossible for the "Fall Brook," "Seymour" and "Beaver" to have been three of that group of thirty-five engines that Brooks delivered to the U. S. Rolling Stock Co.

The "Lark," according to Mr. Thomas P. Culligan, retired Supervisor of Tracks of the Fall Brook Ry. was purchased second hand, the tender was later removed, the engine rebuilt to a switcher and used at Corning. The same was also done to the "Schuyler."

No. 13, originally named "Salt Point," jumped into Seneca Lake at Watkins from the coal trestle on account of the throttle not being latched. The engine was later retrieved and renamed "Sam Patch," after the famous diver of that name.

Nos. 15, 16 and 17 were used by the salt company at Watkins, now the International Salt Co. When the new road was built from Corning to Geneva and Lyons, the Fall Brook discontinued running over the Erie and Northern Central and, on account of this recalled the three engines from the salt company.

The "Ontario" was purchased in 1879 from the Indianapolis, Bloomington & Western R. R., their #60.

The "Reading" was purchased in 1885 but from whom we do not know.

The "Lathrop" ran into a train carrying a car of powder in 1885, 2 or 3 miles south of Lawrenceville, Pa. At first it was the intention of the road to scrap the engine but later she was rebuilt and renamed.

Nos. 44 and 45 were both purchased from the Philadelphia & Reading R. R., and used in the construction of the northern extension from Corning.

D. S. E. (Duncan S. Ellsworth), J. M. E. (John Magee Ellsworth) and Junior (John Magee, Jr.)

The first "John" was too small to climb the hills. The second "John" was constructed at the Corning Shops about 1880, was partially burned and was rebuilt between 1888-1890. The little inspection engine was used to take the "big boss" over the road and carry him back and forth to Watkins. "John" was dismantled years ago and the body of it is now used as a lunch room three miles south of Corning.

There is a possibility of a renaming or a change in the names of some of the engines on the above list. Old timers state that 1st #9 was named "Seneca" and this would seem reasonable in that the engines preceding and succeeding were named after N. Y. State counties. The Schenectady records do not indicate any name on the 2nd #9 and the N. Y. C. records indicate the 1st #9 as "Wedgewood."

In the same way, 1st #11 may have been named "Ward," 1st #34 appears to have been renamed "Elkland" when #63 arrived and the #39 was probably named "Pine Creek" as "Morrisbury" is a name not known in New York or Pennsylvania.

Some time ago our member, Mr. Brown of Oakland, Cal., submitted a print of Coal Fields Ry. #2288. Examination proved it to be without question former Fall Brook #68, the engine had been sold by the New York Central, the new owners retaining the N. Y. C. number. The engine is about ready to be scrapped but it is interesting to learn that "Junior" lived to a ripe old age.

A Note on the Los Angeles and San Pedro Railroad

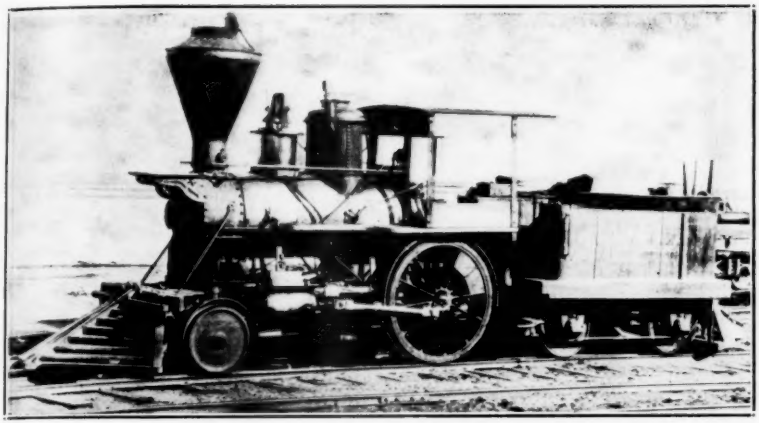
By Randall V. Mills

Two significant events in Western railroading took place during 1869. The first, heralded by ceremonies, long prayers, golden spikes and speeches, was the completion of the transcontinental railroad at Promontory Point. The other, heralded by not much of anything, was the completion of the first railroad to the struggling village of Los Angeles, the twenty mile Los Angeles and San Pedro Railroad. Everyone in the country waited for news from Promontory Point and cheered when the last spike was driven; nobody except Angelenos cared about the Los Angeles and San Pedro. But then, only Angelenos cared about Los Angeles or, for that matter, knew where Los Angeles was.

Geography had played a trick on Los Angeles. San Francisco and Sacramento were both commercial centers located on navigable waters and needed railroads to stretch into the back country to serve as feeders. Los Angeles, on the other hand, needed a railroad to connect it with the nearest possible port at San Pedro, for the unpleasant truth was that Los Angeles was a back country town. In the meantime the struggling little adobe city depended upon stage coaches and freight wagons that carried passengers and the not too abundant freight down to the harbor. The one road was rutted, surfaced generously either with dust or mud. Passengers were sure of excitement, for it was the custom of the times for the patrons to ante up a pool for the driver to encourage him to beat the rival coach; the whole trip was a mad, yelling, jerking scramble. Agitation for a railroad began in 1861 when Eastern capitalists were found willing to build the road within eighteen months providing the County and City together would subscribe $150,000. In May, 1861 the State Assembly granted a franchise. Nothing more was done, however, except for sporadic waves of enthusiasm, quickly countered by teamsters and ranchers. El Monte was especially active against the proposal. A railroad, the ranchers protested, would replace horses and so hurt the market for barley and oats raised on the river bottoms on the Monte. Their point was well taken.

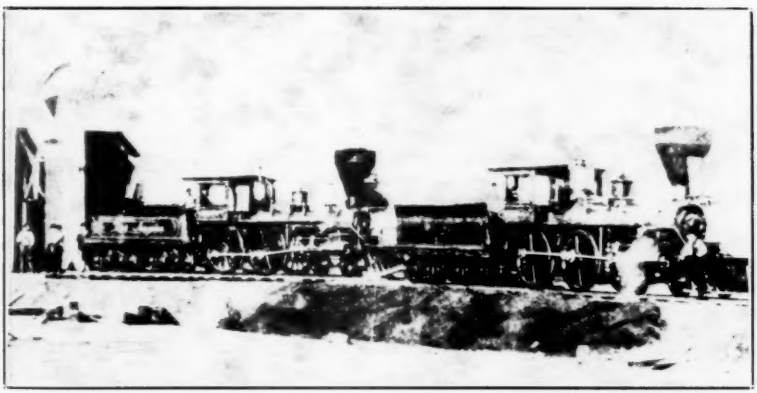
Finally, on February 18, 1868, the Los Angeles and San Pedro Railroad was incorporated. John G. Downey, prominent then and later in Los Angeles' affairs, was president, and the road was backed by Phineas Banning, who controlled the main stage and freight lines from San Pedro to Los Angeles and other towns. Not wishing to be rushed, the company took things easy, and got around to break ground at Wilmington on September 19, 1868, only seven months later. Grading went on slowly, calmly, for a few more months. But in January, 1869, things began to hum when the company's first locomotive arrived at San Pedro and was lightered ashore.

Skeptics would not have been impressed. On the dock was iron, ties and spikes for three miles of railroad, and with it a steam pile driver and the locomotive, christened the *San Gabriel*. She was not a monster, as engines went, and even the little *C. P. Huntington* of the Central Pacific, relegated to the gentle task of pulling a pay car, was large by comparison. The *San Gabriel* was of the 2-2-0 type, had a tall, balloon stack, a bell on her sandbox, a steam-dome nearly as big



—Courtesy G. M. Best.

L. A. & S. P. "San Gabriel"—9x18", 62", thought to have been built by the forerunner of the Union Iron Wks., San Francisco.



—Courtesy G. M. Best

L. A. & S. P. "Los Angeles, "—Schenectady, 1869, 12x22", 60"
"San Pedro,"—Schenectady, 1869, 14x22", 60".

around as her boiler, a diminutive whistle, and brackets for a headlight. Out in front was a long, pointed cow-catcher. The railroad carpenter supplied a simple makeshift cab without glass or folderols. Behind her was a short tender that boasted four wheels. Her front wheels were under the smoke box, and her drivers were under the cab. A short drive rod urged her along. But the engineer, when all was ready, steamed her up, and she ran. That was on January 14, 1870.

After that, things moved faster. On March 24, after a whirlwind campaign led by Banning, the people voted to support a bond issue for the railroad. Encouraged, the line moved forward. By June 14, six miles of track were laid, and farmers, who had voted for the bonds, were complaining that they had been taxed for a railroad which was not ready to carry the expected bumper grain crop for shipment from the port. More rail went down until thirteen miles were in operation in late July. And already revenue was coming in. During the summer, a Sunday School in Compton held an excursion to the harbor at Wilmington. As yet the company had no passenger coaches, so the excursionists made themselves comfortable on straw piled in box cars.

As work progressed, the company operated a makeshift passenger service from Wilmington to the end of track where it transferred patrons to stages to the center of Los Angeles. The opposition stage line advertised the convenience of no change and kept on racing, often beating the railroad's stage into town by half an hour. By the first of August the road started Sunday stage and railroad excursions to the harbor so that the curious could ride the new train (a passenger car had been put in service at last) and visit the shops at Wilmington. The excursion got to the beach at a little before noon and returned at about four in the afternoon. By this time the line was within four miles of Los Angeles.

Then a hitch appeared. In spite of Banning's efforts the opposition found means of checking progress. Surveys called for a track down Alameda Street, then called "The Lane," and immediately objectors to railroad trains on a street for a time held up track laying by injunction. In the meantime the company went ahead improving its properties and building cars and stations. By October the road's second engine arrived at the port. Larger than the *San Gabriel,* she was a standard 4-4-0 with a balloon stack, and on her trials performed beautifully. To give her the necessary note of elegance, the company turned a painter loose on her to give her proper embellishments of scrolls and gilded letters. On her cab was to be her name, Los Angeles, but the artist, in a moment of carelessness, spelled it *Los Angelos,* and she went into service, as it were, under a flag.

On October 26 the line was ready for a public opening. To celebrate the event, the company invited everyone to a free trip to Wilmington, and so many turned out that the excursion operated in two sections, the first hauled by the little *San Gabriel,* and the second, of ten cars, by the *Los Angelos.* It was a hot dusty, bumpy ride, because the company had to use just about all the rolling stock it had, but no one minded, and the fifteen hundred excursionists had a fine time, duly reported in the local paper. When they came back, they found the little

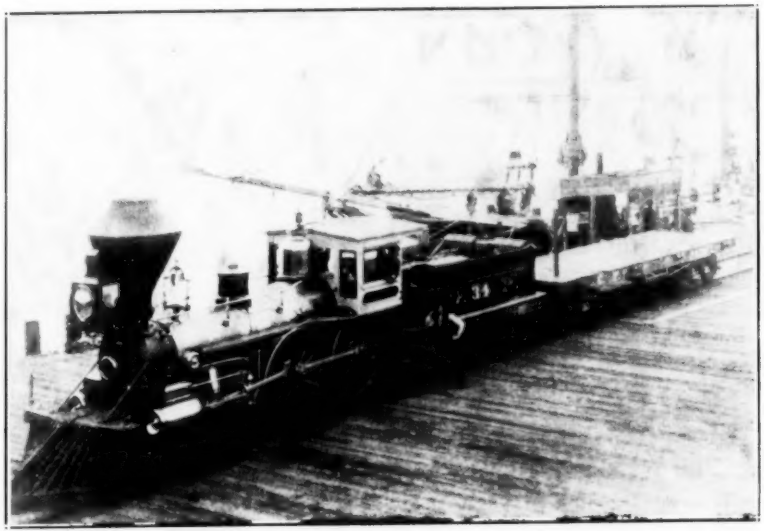
depot at Los Angeles ready for a ball, and everyone stampeded for the affair. A few days later, November 1, 1869, the Los Angeles and San Pedro issued its first timetable and began regular operations.

Physically, the Los Angeles and San Pedro was not very impressive. Except for the locomotives, the rolling stock was homemade at the Wilmington shop from designs by A. A. Polhamus, the master mechanic, and Samuel Atkinson, who had been with eastern roads before coming west to the San Francisco and San Jose when that line was built in 1863. The track, lightly built, followed the route still used by the Southern Pacific's line to San Pedro, curving from the landing on the bay around the bluffs to Wilmington. From there it struck north, skirting the Dominguez hills, passing the little village of Compton, and entering Los Angeles on Alameda Street. Its terminal was at Alameda and Commercial Streets where a freight shed had been erected. At one end was a small waiting room, office, and ticket booth, and upstairs were living quarters for the office force. When the station was built, it was on the edge of town, and soon a mild real estate boom began in the neighborhood, the first of many such booms in Los Angeles. The first real estate agents appeared, too.

The first annual report of the Company, published in the Los Angeles *Star* of June 30, 1870, gives a good picture of the condition of the road. At that time it owned a fraction over twenty and a half miles of main line, and a mile of siding, for a total of about twenty-two miles of track. It had two passenger cars, homemade, with narrow windows, wide letterboards, and low, barely arched roofs extending over the platforms. Evidently Polhamus was keeping to designs of an earlier day, for the coaches were similar in design to those of the Pennsylvania Railroad in the late Forties. For other passenger equipment, the road had a smoking car and an express car, similar in general design to the coaches. Not much freight equipment was needed for the tonnage carried, and the road owned four box cars and fourteen flat cars. The only other pieces on wheels were two hand cars and two dump cars, probably used in construction and maintenance.

A passenger train left Wilmington for Los Angeles at eight in the morning and one in the afternoon and returned, leaving Los Angeles at ten and four. Fares were not low; a single trip from Los Angeles to Compton was fifty cents and to Wilmington it was one dollar, but for a trip to the harbor to meet the regular steamer from San Francisco the fare was $2.50, which included a boat ride on the little steam tender, *Los Angeles*. On Sunday an excursion round trip ticket to Wilmington was only a dollar, and the trains were crowded. Anticipating the later growth of Los Angeles and the interurbans, the Los Angeles and San Pedro sold a commutation ticket from Los Angeles to Wilmington for $7.50 per month.

Freight rates were not low, either, and the tariff offers an interesting sidelight on the condition of the country. When in 1865 a *Railroad, Steamboat and Stage Guide for California* was published in California for the roads out of Sacramento, the tariff rated as double first class such things as game, hobby horses, teazles, and piano fortes, and as simple first class buffalo robes and venison (at owner's risk). Second



—Courtesy G. M. Best

S. P. # 34—Schenectady, 1869. 17x22", 60". Sold to L. A. & S. P. and became their #2.

class included bedcords, cassias, snaths, and lightning rods in bundles. But the Los Angeles and San Pedro needed no such elaborate tariff, and had a simple classification:

To Los Angeles from Anchorage:

Dry goods	$4.00 per ton
Groceries	5.00 per ton
Lumber	7.00 per M.

To Anchorage:

Grain	$2.50 per ton
Wine	3.00 per ton
Hides, dry	.08 each
wet	3.50 per ton
Wool and Honey	3.50 per ton

The report of business showed that the line carried a fair number of passengers and considerable freight, but did not make much money. Business went by spurts; though schooners and small craft did a coastwise business, the great events of the anchorage were the arrivals of the steamer from San Francisco with passengers. Because the harbor was shallow, the aging sidewheelers had to anchor off Deadman's Island and send freight and passengers ashore on the steam tender; only very shallow draft boats could come up to the landing at San Pedro or navigate the tidal channels that meandered through the flats at Wilmington. Business was not too good, and Los Angeles was beginning to soon feel the depression of the early Seventies. The report of business moved in the first four months of 1870, therefore, was not encouraging:

	Steamer Day Passengers	*Daily Passengers*	*Freight Up*	*Freight Down*
January	1,753	867	8,461	1,336
February	1,634	973	5,810	1,671
March	1,843	1,256	6,035	3,120
April	1,766	1,241	3,491	2,595

The Los Angeles and San Pedro had not long to survive as an independent road. By 1870 the Southern Pacific of California was beginning its line down the San Joaquin Valley to head off Tom Scott's Texas Pacific at Yuma on the Colorado River. Citizens at Los Angeles desired earnestly to be on the line and have connection with a transcontinental trunk, but the first surveys disappointed them. From the Tehachapi pass at Mojave, the line cut across the desert to the Cajon Pass, ran through San Bernardino and disappeared down the San Gorgonio Pass, leaving Los Angeles sixty miles off the main line. Los Angeles protested, but as it was not very large (in 1870 Los Angeles papers predicted that Tucson, Arizona would eventually become the bigger town), the officials of the Southern Pacific were uninterested. Louder grew the wails; the Southern Pacific mentioned its terms—a whopping bond issue for construction with the entire Los Angeles and San Pedro Railroad thrown in by the City and County for bonus. Sadly, Los Angeles yielded, and on November 5, 1872, came the election to decide if the City and County would bond themselves for $600,000 and the Los Angeles and San Pedro. The Southern Pacific won, and

took over the L. A. & S. P. By the time the main line from San Francisco reached Los Angeles in 1876, the Southern Pacific was operating trains from Los Angeles to Wilmington, San Fernando, Spadra, and Anaheim, and the independent narrow gauge Los Angeles and Independence had recently opened its line to Santa Monica Bay.

Los Angeles knew it needed connections with the outside world and got them. Eventually it would get a great harbor, the beginning of which were Banning's Landing and railroad at Wilmington and San Pedro. But that is another story.

Note on Sources

The material here is taken from two primary and several secondary sources. A lively first-hand account of the troubles of building the road is in Harris Newmark's *Sixty Years in Southern California*, 1853-1912 (New York, 1916), and many notes on construction and the first report of the company are from the files of the Los Angeles *Star* for 1869 and 1870. For secondary material, the *Historical Outline* of the Southern Pacific Company (San Francisco, 1933), Hubert How Bancroft's *History of California*, Volume VII (San Francisco, 1890) and *Chronicles of the Builders*, Volume VI (San Francisco, 1892) are useful for their narrative accounts. Photographs of the line and a brief account of early railroads of the Los Angeles area are in Laurence Hill's *La Reina; Los Angeles in Three Centuries* (Los Angeles, 1929), a history notable for its full use of the splendid collection of photographs owned by the Security-First National Bank of Los Angeles. The original route of the L. A. & S. P. is still used, but little if anything of the original physical equipment of the line remains.

FIRST RAILROAD ENGINE IN SAN FRANCISCO

The credit and honor of putting the first steam engine in operation upon a railroad in San Francisco, is due and of right belongs, and we hereby record it in favor of John Chinaman. The progressive-go-ahead Yankees have been outstripped in this enterprise, and while speculators and capitalists have been talking and theorizing upon a railroad in San Francisco, a native of the Flowery Kingdom has stepped in and borne off the prize. The engine alluded to is the one constructed in Sacramento, by a Chinaman, which is now on exhibition, and in operation in the express building, corner of California and Montgomery streets, where the builder is in attendance and ready to show the outside barbarians the product of his genius, to explain the advantages of the steam engine, for the moderate sum of "four bitty."

The whole apparatus occupies a space of about three feet in length, one broad, and two in height. The boiler is made of sheet-copper, and

is twenty-four inches long by seven inches in diameter. It is mounted upon wheels that are six inches in diameter, and has all the usual fixtures and paraphernalia for a perfect outfit of a steam engine, such as smokestack, escape valves, pumps, steam gauge, bell, engineer's platform, &c., in fact there seems to be nothing that has been omitted in its construction to make it a perfect model. There is one lumber or wood car attached to the engine, in which the owner carries his tools, oil, &c., &c.

The whole is placed upon a track that is breast high, from one extremity of the room to the other—a distance of about sixty feet—along which the miniature engine is made to fly with rapid speed from end to end, by reversing the wheels. The shrill whistle, snort and blow of the engine, and the noise when in motion, are an exact imitation of a large engine, but of course of less force and power. The whole weighs about 250 pounds when the boiler and reservoir are full.

Steam is generated by burning alcohol underneath the boiler. Upon either side of the engine is conspicuously engraved the name of the model, which John has designated "Sam," in commemoration of the country from which he derived his ideas of steam power. He speaks very good English, and from him we learned that he has devoted eight months to its construction, and has made every portion of it himself, at a cost of $1,100. He commenced before he ever saw a locomotive, but he got his first idea of steam operations while working at Benecia for the P. M. S. S. company, and was aided in perfecting his machine by the introduction of the engines upon the road at Sacramento. He is now exhibiting it to get money to buy tools, so that he can build one of two-horse power, which he has already commenced, and which he intends to take to China. Who can say that this may not be the initiative of the introduction of railroads into the Celestial Empire?

(From the San Francisco *Alta California*, March 7, 1856).

Note: The building in which the exhibit was held was the building to which the wounded James King of William was taken May 14, 1856, two months later, when Casey shot down King and so started the great Vigilante uprising. The P. M. S. S. is the old familiar "Pacific Mail Steamship Company." The railroad at Sacramento mentioned was the Sacramento Valley Railroad, opened that year between Sacramento and Folsom, Calif. Before that, however, a locomotive, not recognized as such by the citizens, had been operated in San Francisco, engaged in the prosaic task of pulling trains of sand from the steam-shovel working at regrading the streets down to the Bay where the land was being filled in. John, however, probably had not seen this locomotive, the "Elephant" as it was called because of its size. At Benecia John probably worked around the steam engines used by the vessels of the Pacific Mail. Steamboats by 1856 were very common on the waters of the San Francisco and Suisun Bays and on the Sacramento and San Joaquin River.—R. V. Mills.

Locomotives of the Maine Central R. R.

By Chas. E. Fisher

The State of Maine, with its mighty rivers and forests is our northernmost New England state. The time was, and not so long ago, that these rivers and its great seacoasts were the chief arteries of transportation. The forests no longer yield the lumber of the past, the demand for building stone has given way to cement and the great ice industry of the Kennebec has been supplanted by manufactured ice and the mechanical refrigerator. Yet the Maine Central still serves the state by a network of lines—formerly separate roads. At one time it was under the domination of the Eastern R. R. and was a part of that great scheme to build a road to the Canadian Provinces and bring the European cities closer to America. When the New Haven set out to control all of the New England roads the majority of its stock was held by the Boston & Maine R. R. and today, the president of the Boston & Maine R. R. is the president of the Maine Central. Those shrewd "down east Yankees" have managed their property well and on more than one occasion have shown their ingenuity in meeting an emergency.

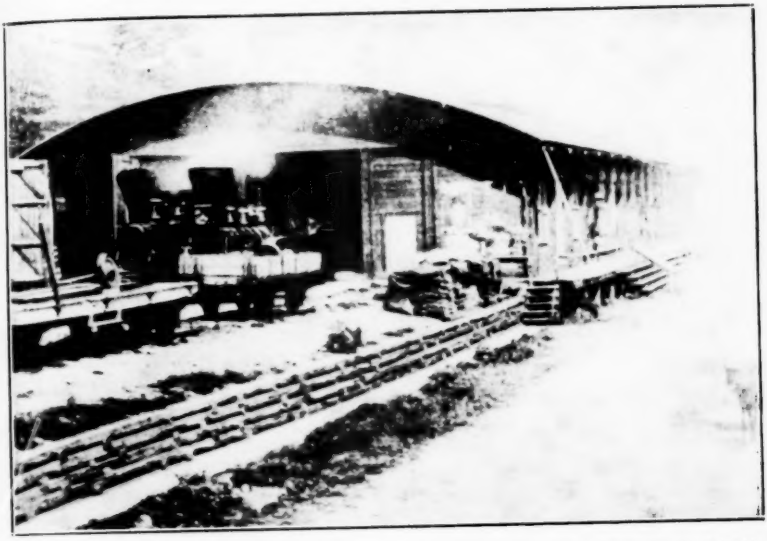
The Maine Central R. R. was the result of a consolidation of the Androscoggin & Kennebec and the Penobscot & Kennebec roads on October 28th, 1862. The former road was chartered on March 28, 1845, to build a railroad from some point on the Atlantic & St. Lawrence R. R. (Danville Jct.), through Lewiston, to some point on the Kennebec river (Waterville). This road was completed on December 3, 1849 and, because of its connection with the Atlantic & St. Lawrence R. R., it was built to a 5′6″ gauge.

The Penobscot & Kennebec R. R. was chartered on April 7, 1845 and they connected with the A. & K. at Waterville and built the line to Bangor. This road was also 5′6″ gauge and thus, by means of the A. & St. L. a line was opened between Portland and Bangor.

Two other roads now enter into the picture. The Kennebec & Portland R. R., chartered April 1, 1836, to build a line from the Atlantic & St. Lawrence R. R., (Yarmouth Jct.) to Augusta, the state capital, was opened on Jan. 1, 1852. The line to Bath was opened on July 4, 1849 and in 1850 the line from Yarmouth Jct. to Westbrook was completed thus giving the road an entrance to Portland over the tracks of the York & Cumberland, later Portland & Rochester R. R. Later, the road was extended around the west side of Portland to connect with the Portland, Saco & Portsmouth R. R. and in the late fifties, the direct line from Westbrook, through Woodfords was built to Commercial Street. On Nov. 5, 1862, the road was reorganized as the Portland & Kennebec R. R. The road was standard gauge.

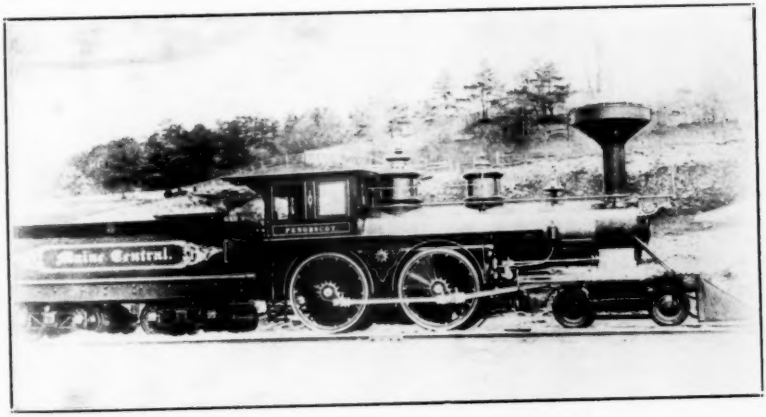
The Somerset & Kennebec R. R. was chartered Aug. 10, 1848, to build a railroad from Augusta to Skowhegan. This road, constructed to standard gauge, was opened for traffic in December, 1856 and was leased to the P. & K. on Jan. 1, 1864.

The construction of these four roads resulted in ruinous rate wars in the attempt to control the traffic. The P & K, with its fine terminal



—Courtesy R. C. Schmid

Fall Brook 2-50, "Merchants Despatch"—Schenectady, 1884.
The "Maine" and the "Hallowell" at Brunswick, Me.
"Maine," Souther, 1851—15x20", 66" "Hallowell," Amoskeag, 1854—15x24", 60"



Me. C. 2-5 "Penobscot," Portland, 1871, 15x24", 60".

facilities in Portland could not handle the business east of Waterville and had to turn it over to the broad gauge Penobscot & Kennebec. This latter road had the terminal facilities at Bangor, but chose to turn its business over to the A & K and they in turn connected with the Atlantic & St. Lawrence. Divisions of traffic were tried but sooner or later fresh trouble started, trains did not connect at Waterville, the change of gauge was a nuisance and then the logical and sensible thing happened—a consolidation of the properties.

As previously stated, the Maine Central R. R. came into being on Oct. 28th, 1862 upon the consolidation of the Androscoggin & Kennebec and the Penobscot & Kennebec roads. In 1870, the Maine Central leased its rival, the Portland & Kennebec R. R. with its lease-held Somerset & Kennebec R. R., and both roads were consolidated with the Maine Central on Nov. 16, 1874. The gauge was changed to standard—the former Penobscot & Kennebec on Nov. 5, 1870 and the former Androscoggin & Kennebec on Nov. 10, 1871. The line was extended from Danville Jct. to meet the former Portland & Kennebec at Royal Jct., and thus the Maine Central had the "back road" via Lewiston and the "river road" via Augusta to Waterville, with good terminals at both ends of its property.

In presenting the roster of locomotives, it seems best to present them in their chronological order as received by the Maine Central R. R. until the renumbering of 1900 and those early locomotives that survived to carry a 1900 number will be indicated with this renumbering and listed in that series.

ANDROSCOGGIN & KENNEBEC R. R. LOCOMOTIVES

MC #	A&K #								
1	1	Androscoggin	Ballardvale		1848	4-4-0	14x20"	60"	
			Exchanged with Bangor Oldtown & Milford for 2nd #18.						
2	2	Ticonic	Portland	# 7	1849	4-4-0	15x22"	60"	Sc—1887
3	3	T. Boutelle	Portland	11	1849	4-4-0	14x20"	60"	Sc—1883
4	4	Franklin	Portland	12	1849	4-4-0	14x20"	60"	Sc—1887
			Renamed "J. Morrill."						
5	5	Penobscot	Cambridge		1851	4-4-0	15x20"	66"	
6	6	Bangor	Cambridge		1851	4-4-0	15x20"	66"	
			Exchanged with Bangor Oldtown & Milford for 2nd #18.						
7	7	E. Noyes	Taunton	159	1854	4-4-0	15x20"	66"	Sc—1887
8	8	Lewiston	Taunton	165	1854	4-4-0	15x20"	66"	Sc—1886
			Renamed "Auburn."						
9	9	C. M. Morse	Portland	71	1854	4-4-0	15x20"	66"	Sc—1886
10		R. B. Dunn	Maine Central R. R. New Brunswick Ry.—1870		1868	4-4-0	14x22"	66"	Sold

Ballardvale was located near Andover, Mass. We have a record of five engines built by this firm. The Cambridge locomotives were built at Cambridgeport, Mass., either under the name of Kirk or Davenport, Bridges & Kirk. We have a record of five engines built by this firm.

PENOBSCOT & KENNEBEC R. R. LOCOMOTIVES

M C #	P & K #								
11	1	G. W. Pickering	Portland	68	1854	4-4-0	14x20″	66″	Sold Canada Southern Ry. in '70's.
12	2	Gold Hunter	Portland	75	1854	4-4-0	14x20″	66″	Sc—1887
13	3	Katahdin	Lowell M. S.	141	1854	4-4-0	14x20″	60″	
14	4	Kenduskeag	Lowell M. S.	142	1854	4-4-0	14x20″	60″	

P&K #1 was renamed "Gen. Sheridan" and Nos. 3 and 4 were sold to the Portland Co. in 1886.

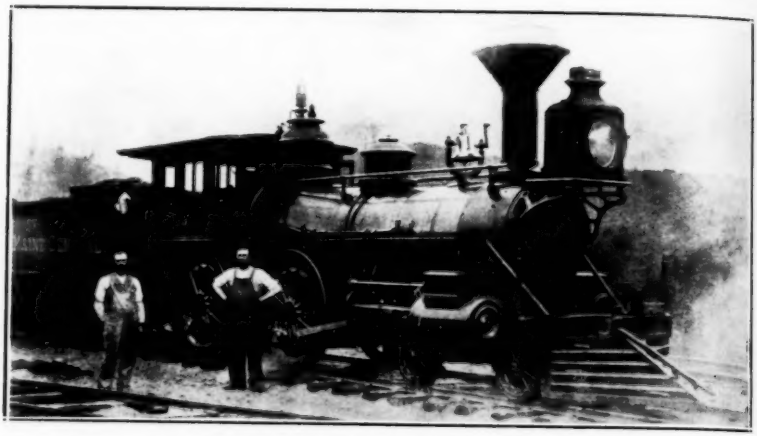
15		A. D. Lockwood	Portland	156	1869	4-4-0	14x20″	60″	Sold New Brunswick Ry. in 1870.

PORTLAND & KENNEBEC R. R. LOCOMOTIVES

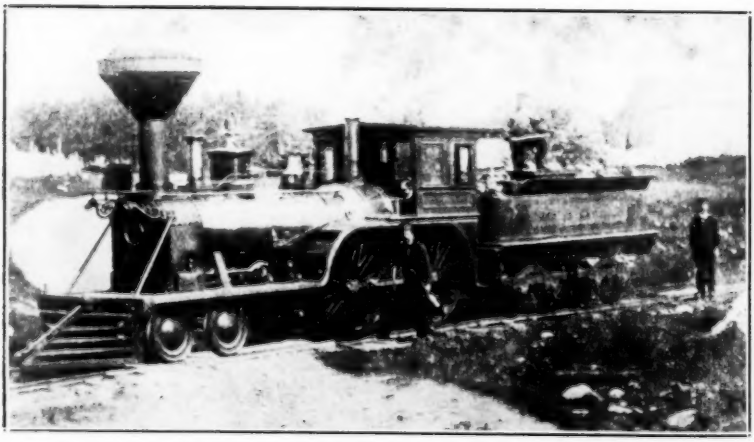
M C #	P & K #								
16	16	R. D. Rice	McKay & Aldus		1866	4-4-0	16x24″	60″	Sc—1894
17	17	D. Alden	McKay & Aldus		1866	4-4-0	16x24″	60″	Sc—1894
18	18	Farmingdale	Bury		1835	4-2-2	11x16″	60″	Sc—1870 Formerly Boston & Worcester R. R. "Brookline."
19	19	Geo. F. Shepley	Portland	171	1870	4-4-0	15x22″	60″	Sc—1893
20	20	H. N. Jose	Portland	174	1870	4-4-0	15x22″	66″	Sc—1894
21	10	Portland	Portland	66	1854	4-4-0	14x22″	60″	Sold— New Brunswick & Canada Ry. — 1870.
22	1	Bath	Souther		1849	4-4-0	15x20″	66″	Sold— New Brunswick & Canada Ry. — 1870.
23	2	Brunswick	Souther		1849	4-4-0	15x20″	66″	Sc—1883
24	3	State of Maine	Souther		1851	4-4-0	15x20″	66″	Sc—1886
25	4	Patten	Souther		1851	4-4-0	15x20″	66″	Sc—1871
26	6	Richmond	Souther		1853	4-4-0	14x20″	60″	Sold— Portland & Ogdensburg R. R.
27	5	Augusta	Hinkley	297	1851	4-4-0	16x20″	66″	Sc—1886
28	7	Reuel Williams	Hinkley	385	1853	4-4-0	14x20″	66″	Sc—1886
29	13	J. S. Cushing	Hinkley		1848	4-4-0	14x18″	60″	Formerly S & K "Atlantic"—originally from Boston & Lowell.
30	8	Gardiner	Taunton	153	1853	4-4-0	15x22″	60″	Sold— Canada Southern Ry. in '70's.
31	14	W. D. Sewell	Mason	177	1864	4-4-0	15x22″	60″	Sc—1893
32	15	Kennebec	Mason	178	1864	4-4-0	15x22″	60″	Sc—1892
33	9	Hallowell	Amoskeag	119	1854	4-4-0	15x24″	60″	Sold— Canadian Construction Co.
34	11	J. D. Lang	Amoskeag	185	1854	4-4-0	15x24″	66″	Sc—1886
35	12	Topsham	Amoskeag	186	1855	4-4-0	15x24″	60″	Sc—1886

The following new engines were built for the Maine Central to replace those either scrapped or sold or to occupy new numbers.

2nd	1	Androscoggin	Portland	212	1872	4-4-0	15x24″	60″	Sc—1894
2nd	5	Penobscot	Portland	188	1871	4-4-0	15x24″	60″	Sc—1894
2nd	6	Bangor	Portland	213	1872	4-4-0	15x24″	60″	Sc—1894
2nd	10	R B Dunn	Portland	203	1871	4-4-0	15x24″	60″	Sc—1894
2nd	15	A D Lockwood	Portland	193	1871	4-4-0	16x24″	60″	Sc—1881
2nd	18	Farmingdale	Portland	91	1858	4-4-0	13x20″	60″	Sc—1880
2nd	25	Gen. Veazie	Portland	——	1855	4-4-0	13x20″	60″	Sc—1880



Me. C. 239, Taunton, 1871, 16x24", 55".



A. R. R. "Livermore," Amoskeag, 1852 13x20", 60". Sold to B. & K. I. Works 1

2nd #18 came from the Bangor Oldtown & Milford R. R., where she carried the name "Aroostook" and #3. 2nd #25 came from the same road, was not renamed by the M. C. and was formerly #5.

36	Union	Baldwin	2217	1870	4-4-0	15x24″	60″	Sc—1894
37	Gov. Morrill	Baldwin	2282	1870	4-4-0	15x24″	60″	Sc—1899
38	Gov. Coburn	Baldwin	2287	1870	4-4-0	16x24″	60″	Sc—1900
39	Waterville	Taunton	518	1871	4-4-0	16x24″	56″	Sc—1900
40	Showhegan	Taunton	525	1871	4-4-0	16x24″	60″	Sc—1900
41	Dexter	Taunton	527	1871	4-4-0	16x24″	60″	Sc—1900

ANDROSCOGGIN R. R.

On Aug. 10th, 1848, this road was chartered to build a line from Farmington to Leeds Jct. on the A & K. The road was broad gauge and opened in 1860. As the result of friction between the two roads, the line was extended to Brunswick, with a branch to Lewiston in 1861. This was built to standard gauge to connect with the Portland & Kennebec at Brunswick. The entire line was made standard gauge in 1862 and the road was leased by the Maine Central—June 29th, 1871. It owned the following locomotives:

M C #	ARR #								
42	1	Leeds	Amoskeag	#69	1852	4-4-0	13x20″	60″	Sc—1880
43	2	Livermore	Amoskeag	70	1852	4-4-0	13x20″	60″	Sold—
			Bangor & Katahdin Iron Works #1.						
—	3	Dr. Garcelon	Amoskeag	176	1854	4-4-0	14x20″	60″	Taken by creditors.
44	3	Oliver Moses	Hinkley		1861	4-4-0	12x22″	60″	Sc—1884
45	4	Lyman Nichols	Hinkley		1861	4-4-0	12x22″	60″	Sc—1885
46	5	Farmington	Hinkley		1864	4-4-0	14x22″	54″	Sold—
			Bangor & Piscataquis R. R.						
47	6	Bates	Hinkley		1864	4-4-0	14x22″	54″	Sc—1880
48	7	Lewiston	Manchester	98	1867	4-4-0	15x24″	60″	Sc—1894
49	8	David Patten	Manchester	271	1870	4-4-0	14x22″	60″	Sc—1892

The following were ordered by the Maine Central R. R.

50	Newport	Hinkley		1871	4-4-0	15x24″	60″	Sc—1899
51	Belfast	Rhode Island	305	1871	4-4-0	16x24″	60″	Sc—1894
52	Fairfield	Taunton	537	1872	4-4-0	16x24″	60″	Sc—1900
53	Winthrop	Portland	206	1872	4-4-0	15x24″	60″	Sc—1894
54	Atlas	Portland	167	1872	0-4-0	12x18″	38″	Re 1
55	John B. Brown	Portland	257	1873	4-4-0	16x24″	66″	Re 43
56	Geo. L. Ward	Portland	288	1873	4-4-0	16x24″	60″	Sc—1898
57	Gen. Knox	Manchester	424	1872	0-4-0	14x22″	48″	Sc—1888
		Purchased from Knox & Lincoln R. R.						
58	Lewis Pierce	Taunton	634	1872	4-4-0	16x24″	60″	Re 37
59	J. H. Drummond	Taunton	635	1872	4-4-0	16x24″	60″	Re 36
60	Noah Woods	Baldwin		1873	4-4-0	16x24″	60″	Re 35
61	L. Strickland	Baldwin		1873	4-4-0	16x24″	60″	Re 34
62	Philander Coburn	Portland	302	1877	4-4-0	16x24″	60″	Re 33
63	Wm. G. Davis	Portland	323	1877	4-4-0	16x24″	60″	Re 32
64	Arthur Sewall	Portland	349	1877	4-4-0	16x24″	60″	Sc—1899
65	First nameless	Portland	352	1879	4-4-0	16x24″	60″	Sc—1894
66		Portland	353	1879	4-4-0	16x24″	60″	Sc—1900
67		Portland	394	1881	4-4-0	17x24″	66″	Re 67
68		Portland	395	1881	4-4-0	17x24″	66″	Re 68
69		Portland	450	1882	4-4-0	17x24″	66″	Re 69
70		Portland	451	1882	4-4-0	17x24″	66″	Re 70

EUROPEAN & NORTH AMERICAN R. R.

This road was chartered Aug. 28th, 1853 to build a railroad from Bangor to Vanceboro (the international boundary line) within the state of Maine. It was opened for traffic on Oct. 18, 1871 and on Oct. 12, 1872 it was consolidated with a company of the same name of New Brunswick. Built with the idea of lessening the sailing distance of vessels bound to Boston and New York it was originally of broad gauge construction. Almost as soon as it was opened, the Maine Central changed their road to standard gauge and in September, 1878, the E & N A followed suit. It went through a reorganization in 1880 and on April 1, 1882, the Maine Central leased that portion of the road within the state of Maine, to Vanceboro.

The locomotives were as follows:

M C #	E&NA #								
71	1	Orono	Hinkley		1868	4-4-0	14x22"	60"	Sc—1893
72	2	Winn	Hinkley		1869	4-4-0	16x24"	60"	Sc—1894
—	3	M H Angell	Portland	42	1853	4-4-0	14x22"	60"	Formerly G. T. R. "Nulhegan"—not used by Me. C.
73	4	Oldtown	Hinkley		1869	4-4-0	14x22"	60"	Sc—1889
74	5	Dirigo	Hinkley		1869	4-4-0	14x22"	60"	Sc—1892 Formerly Eastern Maine R. R. "Milford"
75	6	Bangor	Portland	187	1870	4-4-0	15x24"	60"	Sc—1895
76	7	Not Named	Baldwin	2404	1871	4-4-0	16x24"	60"	Sc—1894
77	8	Not Named	Baldwin	2405	1871	4-4-0	16x24"	60"	Sc—1894
78	9	Not Named	Portland	191	1871	4-4-0	16x24"	60"	Re 30
79	10	Not Named	Portland	192	1871	4-4-0	16x24"	60"	Re 29

E & N. A. Nos. 11 and 12 were formerly Me. C. Nos. 1 and 6 obtained by lease of the Bangor, Oldtown & Milford R. R. They were not used by the Me. C.

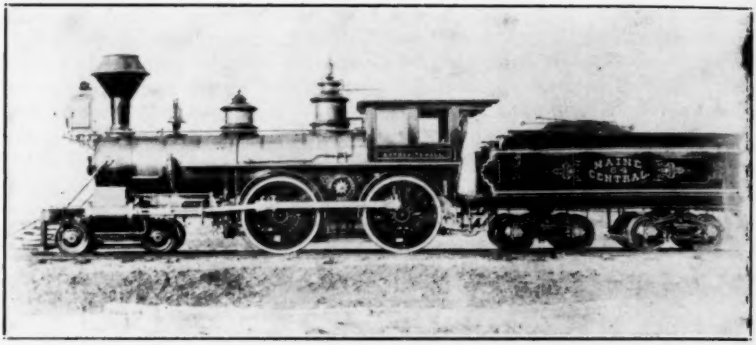
	13	John Eliot	Hinkley	153	1848	4-4-0	14x18"	60"	Purchased from Old Colony R. R. Not used by Me. C.
80	14	Not Named	Portland	214	1872	4-4-0	15x24"	66"	Sc—1893
81	15	Not Named	Portland	215	1872	4-4-0	15x24"	66"	Sc—1894
82	16	Not Named	Portland	362	1880	4-4-0	16x24"	60"	Re 28
83	17	Not Named	Portland	370	1880	4-4-0	16x24"	60"	Re 27
84	18	Not Named	Manchester	912	1881	4-4-0	15x22"	66"	Sc—1894
85	19	Not Named	Manchester	913	1881	4-4-0	15x22"	66"	Sc—1899
86	20	Not Named	Hinkley		1882	4-4-0	17x24"	60"	Re 26
87	21	Not Named	Hinkley		1882	4-4-0	17x24"	60"	Re 25

The following new engines were purchased by the Me. C:

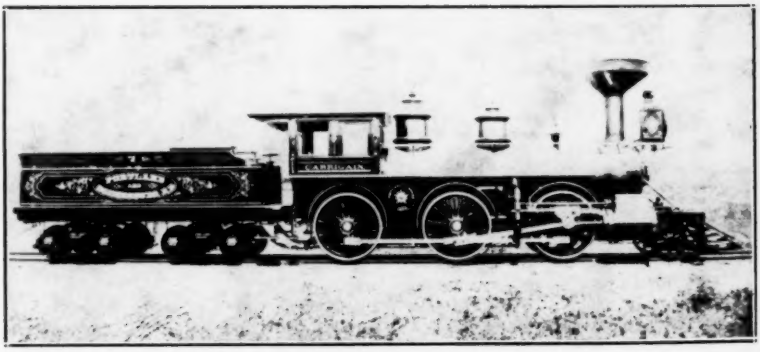
88-89	Portland	454-455	1883	4-4-0	17x24"	60"	Re 88-89
90-92	Portland	519-521	1884	4-4-0	17x24"	62"	Re 90-92
93	Portland	524	1884	0-4-0	15x20"	44"	Re 2
94-97	Portland	525-528	1884	4-4-0	17x24"	62"	Re 94-97

As numbers became vacant, the Me. C. filled these vacancies with new locomotives:

2nd	3	Rhode Island	1543	1885	4-4-0	18x24"	56"	Re 121
2nd	11	Rhode Island	1544	1885	4-4-0	18x24"	56"	Re 122
3rd	15	Rhode Island	1545	1885	4-4-0	18x24"	56"	Re 123
3rd	18	Rhode Island	1547	1885	4-4-0	17x24"	62"	Re 54
2nd	21	Rhode Island	1546	1885	4-4-0	17x24"	62"	Re 55
2nd	22	Rhode Island	1548	1885	4-4-0	17x24"	62"	Re 56
2nd	24	Rhode Island	1549	1885	4-4-0	17x24"	62"	Re 59



Me. C. #64, "Arthur Sewall," Portland, 1877, 16x24", 60". Last Engine to carry a name on the Me. C.



P. & O. "Carrigain"—Portland. 1874—17x24", 54"

3rd	25	Rhode Island	1550	1885	4-4-0	17x24″	62″	Re 60
2nd	8	Portland	540	1886	4-4-0	17x24″	62″	Re 51
2nd	13	Portland	541	1886	4-4-0	17x24″	62″	Re 52
2nd	14	Portland	542	1886	4-4-0	17x24″	62″	Re 53
2nd	26	Portland	543	1886	4-4-0	17x24″	62″	Re 61
2nd	27	Portland	544	1886	4-4-0	17x24″	62″	Re 62
2nd	29	Portland	545	1887	4-4-0	17x24″	56″	Re 64
2nd	30	Portland	546	1887	4-4-0	17x24″	56″	Re 65
2nd	33	Portland	547	1887	4-4-0	17x24″	56″	Re 66
2nd	34	Portland	548	1887	4-4-0	17x24″	62″	Re 71
2nd	35	Portland	549	1887	4-4-0	17x24″	62″	Re 72
2nd	42	Portland	550	1887	4-4-0	17x24″	62″	Re 73
2nd	43	Portland	551	1887	4-4-0	17x24″	56″	Re 75
2nd	44	Portland	552	1887	4-4-0	17x24″	56″	Re 76
2nd	45	Portland	553	1887	4-4-0	17x24″	56″	Re 77
2nd	46	Portland	555	1887	4-4-0	17x24″	62″	Re 78
2nd	47	Portland	575	1887	4-4-0	17x24″	62″	Re 79
2nd	57	Portland	576	1887	4-4-0	17x24″	56″	Re 57
2nd	2	M. C. R. R.		1887	0-4-0	16x24″	44″	Re 8
2nd	7	Portland	570	1887	0-4-0	16x24″	44″	Re 7
2nd	9	Portland	571	1887	0-4-0	16x24″	44″	Re 9
2nd	12	Portland	572	1887	0-4-0	16x24″	44″	Re 10
2nd	28	Portland	574	1887	4-4-0	17x24″	62″	Re 63
2nd	4	M. C. R. R.		1888	0-4-0	16x24″	44″	Re 4
2nd	73	M. C. R. R.		1889	0-4-0	16x24″	44″	Re 11
	98	Portland	583	1888	4-4-0	18x24″	62″	Re 124
	99	Portland	584	1888	4-4-0	18x24″	62″	Re 125
	100	M. C. R. R.		1889	0-4-0	16x24″	44″	Re 6

PORTLAND & OGDENSBURG R. R.

Ogdensburg—a mecca of transportation ambitions to reach out and grasp the ever flowing west to east traffic. With their first road towards the west in Canadian control, the citizens of Portland made another attempt. This road was chartered on Feb. 11, 1867 and opened to Lunenburg, Vt. on Dec. 22, 1875. The tracks of the Concord & Montreal were used between Fabyans and Scott's Jct. until 1889. Vermont interests, naturally, opposed the construction of this road and it was finally leased to the Me. C. on Aug. 20, 1888. Scenically, it is our best New England road. No one who has ever ridden over the road can forget Crawford North, Frankenstein Trestle and Willey Brook Bridge, all located in the White Mountains. The Me. C. purchased from the St. J. & L. C. the line from Lunenburg to St. Johnsbury but the road has some pretty stiff grades which add to the expense of operation. To many of us whose memory of the September 1938 hurricane is still fresh and the Vermont floods the value of this line in time of stress and emergency has been fully demonstrated.

MC #	P&O #								
101	1	Presumpscot	Souther M. C. "Richmond"		1853	4-4-0	14x20″	60″	Formerly subsequently rebuilt to 0-4-0.
102	2	Saco	Portland	183	1870	4-4-0	15x24″	66″	Sc—1893
103	3	Sebago	Portland	182	1870	4-4-0	15x24″	66″	Sc—1893
104	4	Ossipee	Portland	173	1870	4-4-0	14x22″	66″	Sc—1889
105	5	Fryeburg	Portland	189	1871	4-4-0	15x26″	54″	Exchanged with Sebasticook & Moosehead Lake for 2nd 105.
2nd 105	–		Rhode Island	2807	1897	0-4-4	15x20″	44″	Re 3
106	6	Pequawket	Portland	246	1873	4-4-0	16x24″	60″	Re 24

107	7	Carrigain	Portland	221	1874	2-6-0	17x24″	54″	Re 111
108	8	Crawford	Portland	329	1875	2-6-0	17x26″	54″	Re 15
109	9	Frankenstein	Portland	330	1876	2-6-0	17x26″	54″	Re 16
110	10	Resolution	Portland	399	1881	2-6-0	17x26″	54″	Sc—1894
111	11	Webster	Portland	452	1882	4-4-0	17x24″	60″	Re 98
112	12	Kearsarge	Hinkley		1885	4-4-0	17x24″	60″	Re 93
113	13	Chocorua	Portland	537	1885	2-6-0	19x26″	54″	Re 161
114	14	Avalon	Portland	538	1885	2-6-0	19x26″	54″	Re 162
115	15	**Willey**	Portland	529	1885	4-4-0	17x24″	60″	Re 87
116	16	Willard	Portland	530	1885	4-4-0	17x24″	60″	Re 86

The following were ordered by the Maine Central:

2nd	101		Portland	587	1889	4-4-0	18x24″	60″	Re 126
2nd	104		Portland	588	1889	4-4-0	18x24″	60″	Re 127
	117		Portland	600	1889	4-4-0	18x24″	60″	Re 128
	118		Portland	601	1889	4-4-0	18x24″	60″	Re 129
	119		Portland	586	1889	4-4-0	18x24″	60″	Re 130
	120		M. C. R. R.		1890	0-6-0	16x24″	44″	Re 5
	121		Portland	604	1890	2-6-0	19x26″	66″	Re 234
	122		Portland	605	1890	2-6-0	19x26″	66″	Re 235
	123		Portland	606	1890	2-6-0	19x26″	66″	Re 236
	124		Portland	607	1890	2-6-0	19x26″	66″	Re 237

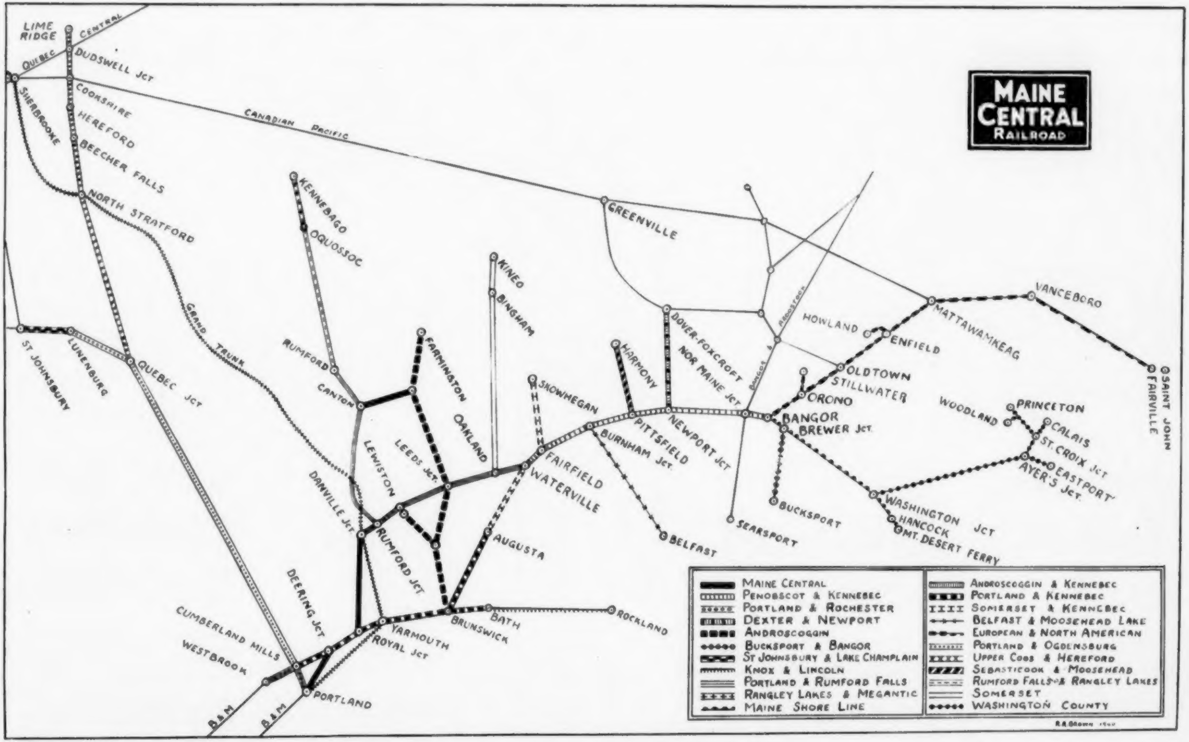
UPPER COOS & HEREFORD R. R.

The Upper Coos R. R. was chartered Aug. 28th 1883 to build a line from Quebec Jct., N. H., to Hereford, P. Q., and was opened for traffic in Feb. 1891. The Hereford Ry. was chartered May 4th, 1885, to build a line from Hereford to Lime Ridge, P. Q. This road was opened for traffic in Nov. 1889. Maine Central interests completed the former and the combined roads were leased on May 1, 1890.

M C #	UC&H #								
125	1	Stratford	Rhode Island		1872	4-4-0	16x24″	60″	Re 23
					Purchased second hand				
126	2	Stewartstown	Rhode Island	1853	1887	4-4-0	17x24″	60″	Re 85
127	3	Colebrook	Rhode Island	2088	1888	4-6-0	17x24″	54″	Re 116
128	4	Cookshire	Rhode Island		1889	4-4-0	17x24″	60″	Re 84
129	5	Sawyerville	Rhode Island		1889	4-4-0	17x24″	60″	Re 83

The following were ordered by the Maine Central:

130	Portland	609	1890	4-4-0	17x24″	60″	Re 82
131	Portland	611	1891	4-4-0	17x24″	60″	Re 81
132	Portland	612	1891	4-4-0	18x24″	66″	Re 132
133	Portland	613	1891	4-4-0	18x24″	66″	Re 133
134	Schenectady	3471	1891	4-4-0	18x24″	66″	Re 134
135	Schenectady	3472	1891	4-4-0	18x24″	66″	Re 135
136	Rhode Island	2613	1891	2-6-0	19x26″	54″	Re 238
137	Rhode Island	2614	1891	2-6-0	19x26″	54″	Re 239
138	Rhode Island	2615	1891	2-6-0	19x26″	54″	Re 240
139	Rhode Island	2616	1891	2-6-0	19x26″	54″	Re 241
140	Rhode Island	2764	1892	4-6-0	19x24″	54″	Re 272


MAINE CENTRAL RAILROAD
LIME RIDGE
QUEBEC CENTRAL
DUDSWELL JCT
SHERBROOKE
COOKSHIRE
HEREFORD
BEECHER FALLS
NORTH STRATFORD
CANADIAN PACIFIC
GRAND TRUNK
ST JOHNSBURY
LUNENBURG
QUEBEC JCT
KENNEBAGO
OQUOSSOC
RUMFORD
CANTON
FARMINGTON
OAKLAND
LEEDS JCT.
LEWISTON
DANVILLE JCT
RUMFORD JCT
KINEO
BINGHAM
SKOWHEGAN
FAIRFIELD
WATERVILLE
AUGUSTA
GREENVILLE
HARMONY
PITTSFIELD
BURNHAM JCT.
BELFAST
DOVER-FOXCROFT
NOR MAINE JCT
NEWPORT JCT
BANGOR & AROOSTOOK
SEARSPORT
BANGOR
BREWER JCT.
BUCKSPORT
ORONO
STILLWATER
OLDTOWN
HOWLAND
ENFIELD
MATTAWAMKEAG
VANCEBORO
SAINT JOHN
FAIRVILLE
WOODLAND
PRINCETON
CALAIS
ST. CROIX JCT
EASTPORT
AYER'S JCT.
WASHINGTON JCT
HANCOCK
MT. DESERT FERRY
DEERING JCT
CUMBERLAND MILLS
WESTBROOK
PORTLAND
ROYAL JCT
YARMOUTH
BRUNSWICK
BATH
ROCKLAND
B&M
B&M
MAINE CENTRAL
PENOBSCOT & KENNEBEC
PORTLAND & ROCHESTER
DEXTER & NEWPORT
ANDROSCOGGIN
BUCKSPORT & BANGOR
ST JOHNSBURY & LAKE CHAMPLAIN
KNOX & LINCOLN
PORTLAND & RUMFORD FALLS
RANGLEY LAKES & MEGANTIC
MAINE SHORE LINE
ANDROSCOGGIN & KENNEBEC
PORTLAND & KENNEBEC
SOMERSET & KENNEBEC
BELFAST & MOOSEHEAD LAKE
EUROPEAN & NORTH AMERICAN
PORTLAND & OGDENSBURG
UPPER COOS & HEREFORD
SEBASTICOOK & MOOSEHEAD
RUMFORD FALLS & RANGLEY LAKES
SOMERSET
WASHINGTON COUNTY

KNOX & LINCOLN R. R.

This road was chartered Mar. 21st, 1864 to build a line between Woolwich and Rockland. The road was opened Nov. 1, 1871 and on Aug. 1, 1890 it was sold to the Penobscot Shore Line R. R. On Jan. 21, 1891 its name was changed to Knox & Lincoln and the road was leased to the Me. C. on July 20, 1891.

M C #	K & L #								
141	1	Francis Cobb	Manchester	264	1870	4-4-0	14x22"	60"	—Sold to Somerset Ry.
142	2	Edwin Flye	Manchester	265	1870	4-4-0	14x22"	60"	Sc—1891
143	3	Henry Ingalls	Manchester	343	1871	4-4-0	14x22"	60"	Sc—1893
144	4	Edward Sewell	Manchester	344	1871	4-4-0	14x22"	60"	Sc—1893
145	5	Thomaston	Manchester	380	1871	4-4-0	14x22"	60"	—Sold to Somerset Ry.
	6	Gen. Knox	Manchester	424	1872	0-4-0	14x22"	48"	—Sold to Maine Central #57
146	6	Gen. Knox	Manchester	1171	1883	4-4-0	16x24"	60"	Re 22
147	7	John T. Berry	Manchester	1482	1890	4-4-0	16x24"	60"	Re 21

The following were ordered by the Maine Central R. R:

2nd	141	Portland	618	1891	4-4-0	17x24"	56"	Re 80
2nd	142	Portland	619	1891	4-4-0	18x24"	66"	Re 136
2nd	49	Rhode Island	2763	1892	4-6-0	19x24"	54"	Re 271
	148	Rhode Island	2728	1892	4-6-0	19x24"	54"	Re 273
	149	Rhode Island	2729	1892	4-6-0	19x24"	54"	Re 274
2nd	31	Rhode Island	2778	1892	2-6-0	19x26"	56"	Re 224
2nd	32	Rhode Island	2779	1892	2-6-0	19x26"	56"	Re 225
2nd	23	Portland	617	1892	4-4-0	17x24"	62"	Re 58
2nd	74	Portland	614	1892	4-4-0	17x24"	56"	Re 74
2nd	145	Portland	620	1892	4-4-0	18x24"	62"	Re 131
2nd	72	Rhode Island	2714	1892	0-6-0	18x24"	44"	Re 174
2nd	102	Rhode Island	2715	1892	0-6-0	18x24"	44"	Re 177
3rd	5	Schenectady	4119	1893	4-4-0	19x24"	62"	Re 191
3rd	10	Schenectady	4120	1893	4-4-0	19x24"	62"	Re 192
2nd	80	Schenectady	4121	1893	4-4-0	19x24"	62"	Re 194
2nd	143	Schenectady	4122	1893	4-4-0	19x24"	62"	Re 197
	150	Schenectady	4123	1893	4-4-0	19x24"	62"	Re 198
	151	Schenectady	4124	1893	4-4-0	19x24"	62"	Re 199
2nd	19	Schenectady	3996	1893	2-6-0	19x26"	50"	Re 222
2nd	71	Schenectady	3997	1893	2-6-0	19x26"	50"	Re 231
2nd	144	Schenectady	3998	1893	2-6-0	19x26"	50"	Re 242
2nd	103	Schenectady	4163	1893	0-6-0	18x24"	44"	Re 178
3rd	1	Schenectady	4221	1894	0-6-0	18x24"	44"	Re 171
3rd	6	Schenectady	4222	1894	0-6-0	18x24"	44"	Re 172
2nd	16	Schenectady	4223	1894	0-6-0	18x24"	44"	Re 173
	152	Schenectady	4164	1894	0-6-0	18x24"	44"	Re 179
2nd	17	Schenectady	4211	1894	2-6-0	19x26"	56"	Re 221
2nd	20	Schenectady	4212	1894	2-6-0	19x26"	56"	Re 223
2nd	36	Schenectady	4213	1894	2-6-0	19x26"	56"	Re 226
2nd	48	Schenectady	4214	1894	2-6-0	19x26"	56"	Re 227
2nd	51	Schenectady	4215	1894	2-6-0	18x26"	56"	Re 228
2nd	53	Schenectady	4216	1894	2-6-0	19x26"	56"	Re 229
2nd	65	Schenectady	4217	1894	2-6-0	19x26"	56"	Re 230
2nd	76	Schenectady	4218	1894	2-6-0	19x26"	56"	Re 232
2nd	110	Schenectady	4207	1894	2-6-0	19x26"	56"	Re 233
	153	Schenectady	4208	1894	2-6-0	19x26"	56"	Re 243

	154	Schenectady	4209	1894	2-6-0	19x26″	56″	Re 244
	155	Schenectady	4210	1894	2-6-0	19x26″	56″	Re 245
2nd	77	Schenectady	4224	1894	4-4-0	19x24″	62″	Re 193
2nd	81	Schenectady	4225	1894	4-4-0	19x24″	62″	Re 195
2nd	84	Schenectady	4226	1894	4-4-0	19x24″	62″	Re 196
	156	Schenectady	4227	1894	4-4-0	19x24″	62″	Re 200
	157	Schenectady	4228	1894	4-4-0	19x24″	62″	Re 201
	158	Schenectady	4471	1896	2-6-0	19x26″	62″	Re 301
	159	Schenectady	4472	1896	2-6-0	19x26″	62″	Re 302
	160	Schenectady	4473	1896	2-6-0	19x26″	62″	Re 303
	161	Schenectady	4474	1896	2-6-0	19x26″	62″	Re 304
	162	Schenectady	4475	1896	2-6-0	19x26″	62″	Re 305
2nd	37	Schenectady	4965	1899	4-6-0	19x24″	62″	Re 275
2nd	50	Schenectady	4966	1899	4-6-0	19x24″	62″	Re 276
2nd	56	Schenectady	5359	1899	4-6-0	19x24″	62″	Re 277
2nd	64	Schenectady	5360	1899	4-6-0	19x24″	62″	Re 278
	163	Schenectady	5151	1899	2-6-0	19x26″	62″	Re 306
	164	Schenectady	5152	1899	2-6-0	19x26″	62″	Re 307
	165	Schenectady	5153	1899	2-6-0	19x26″	62″	Re 308
	166	Schenectady	5154	1899	2-6-0	19x26″	62″	Re 309
2nd	75	Schenectady	5565	1900	0-6-0	18x24″	44″	Re 175
2nd	85	Schenectady	5566	1900	0-6-0	18x24″	44″	Re 176

In some classes the diameter of the drivers is listed and in others the diameter of the wheel center. This is due to the latter being the original dimension used for the drivers. In the subsequent list, the diameter of the drivers will be given.

Before closing, one or two other items deserve mention. At the time the gauge was changed on the Androscoggin R. R., report has it that they purchased or rented two second hand locomotives from the Hinkley Works—the "Aetna"—known as "Widder" and the "Leopard." These were of the 0-4-0 type, probably from the Boston & Worcester R. R. They were subsequently sold or returned to the Hinkley Works in 1862.

The Bucksport & Bangor R. R., chartered Feb. 1, 1873 to connect those two places in Maine, was originally built to 5′6″ gauge, and opened to traffic Dec. 21, 1874. On Sept. 13, 1877, the road was changed to standard gauge. Possibly the advantages of narrow gauge operation impressed the management, at any rate on Oct. 1, 1879, the road was altered to 3′ gauge. In 1882 the road was reorganized as the Eastern Maine R. R., and on Mar. 1, 1883, the road was leased to the Maine Central and the gauge was changed to that of standard. What the locomotives were and where they went, we don't know. We find one in the roster of European & North American locomotives.

The roads that were taken over by the Maine Central and the locomotives they acquired subsequent to 1900 will be covered in another article.

The Bangor & Piscataquis R. R.

By Chas. E. Fisher

In my contribution in Bulletin #53—Locomotives of the Bangor & Aroostook R. R., it was known that the B & P roster was a bit sketchy. Although the writer was privileged to examine the records of the motive power department, these had but little on the B & P. The Bangor fire of 1911 destroyed many of the records at Bangor and it was assumed that there was nothing there.

Since the publication of this Bangor & Aroostook roster, the writer has received a couple of very interesting letters from Mr. Wingate F. Cram, the President of the road.

In the matter of the Bangor & Katahdin Iron Works, the date of incorporation—February 22, 1876 was taken from Poor's Manual, usually a good authority, and they state, the road was organized Aug. 2, 1881. Mr. Cram states that the charter was issued Aug. 2, 1881 and that the company was organized on Aug. 13, 1881. The iron works and slate quarries at Brownville had long been in operation and the date of incorporation (1876) stated by Poor's must refer to another charter as there can be no doubt but that Mr. Cram is correct.

In the matter of the locomotives for the Bangor & Katahdin Iron Works Ry. Mr. Cram writes the following:

"On June 30, 1887—the Bangor & Katahdin Iron Works Railway owned outright two locomotives, No. 1 (as illustrated in your bulletin) and an old locomotive, No. 2, concerning which I find no data. It also had No. 3, which my father had obtained new for it in 1883, title being in F. A. Wilson, Trustee.

"As of June 30, 1887, the K. I. W. Ry. leased all of its property to the Bangor & Piscataquis R. R. Co. for 999 years. We have the original lease. It does not detail any of the property leased but excerpts from the lease: 'fuel on hand and one locomotive, being Locomotive No. 2, an old locomotive which is reserved by said Katahdin Company, and therefor is substituted a new locomotive, No. 3, the title to which is in F. A. Wilson, Trustee, a release of whose title is to be secured, so that the said new locomotive passes under this lease in place of said old Locomotive No. 2.'

"As the individuals owning the Iron Works were about the same as the individuals owning the Iron Works Railway, it would seem probable that they took old No. 2 or the boiler for the Iron (Ore) Works. At any rate, exit K. I. Wks. No. 2.

"In the lease of the Bangor & Piscataquis Railroad (and with it its lease of the K. I. to the Bangor & Aroostook in 1892) the two locomotives as above are thus described:

(B &P) 'No. 6. Cylinders 13x22. Drivers 5 feet. K. I. Wks Br. Manchester Co. 34 years old.'
'No. 7. Cylinders 14x22. Drivers 5 feet. K. I. Wks Br. Manchester Co. 7 years old.'

"I have no further data (in this office) concerning B & P No. 6. (B. & K. I. Wks. No. 1)

"B & P No. 7 (B. & K. I. Wks. No. 3) was partially rebuilt, according to our annual report, in the year ending June 30, 1896."

This makes our roster for the Bangor & Katahdin Iron Works Ry. as follows:

#1	"Livermore"	Amoskeag	#70	1852	4-4-0	13x20"	60"	Ex Me. C. #43
#2	Unknown							
#3		Manchester	#1172	1884	4-4-0	14x22"	60"	

The Amoskeag Co. was located at Manchester, N. H. so that the reference on the inventory is pardonable. At some time, new cylinders must have been applied.

The #2, may or may not have been the Argillite, Hinkley #867, built in 1868. It could have been purchased by the Works and used by them, later being turned over to the railroad. The name, meaning a clayey rock might be proper for that section and there is every reason to believe that this engine was probably the No. 2.

Turning now to the Bangor & Piscataquis R. R., Mr. Cram writes as follows:

"On April 1, 1892, the Bangor & Piscataquis R. R. Co. owned six locomotives and leased its property to the Bangor & Aroostook R. R. Co. (together with the lease of the K. I. Wks. Ry.)

"The six owned locomotives are thus described in the inventory of April 1, 1892 accompanying the lease:

'No. 1. Cylinders 14x22". Drivers 4½ feet
Hinkley & Williams—31 years old.'

"Comment: This locomotive was in existence on March 1, 1899, was still numbered one (1) (B & A)."

'No. 2. Cylinders 13x22. Drivers 5 feet
Portland Company—22 years old.'

"Comment: She was one of 'four old locomotives' offered for sale in October 1899. The only one of the four for which I have a number. She was leased to the Patten & Sherman R. R. in September, 1899."

'No. 3. Cylinders 14x22". Drivers 5 feet
Portland Co.—22 years old.'

"Comment: She was owned by the Bangor & Aroostook on April 1, 1899."

'No. 4. Cylinders 14x22. Drivers 5 feet
Portland Co.—22 years old.'

"Comment: This locomotive was owned by the Bangor & Aroostook on April 1, 1899."

'No. 5. Cylinders 16x22"
Manchester Co.—8 years old.'

"Comment: Our annual report shows that she was partially rebuilt and changed from wood to coal burning in the year ending June 30, 1896. She was owned by the Bangor & Aroostook on April 1, 1899."

'No. 8. Cylinders 16x24". Drivers 5 feet
Manchester Co.—4 years old.'

"Comment: Our annual report shows that she was partially rebuilt and changed from wood to coal burning in the year ending June 30, 1896. She was owned by the Bangor & Aroostook on April 1, 1899.

This would make our Bangor & Piscataquis roster as follows:

1st	#1	No data				4-4-0			
2nd	#1	Foxcroft	Hinkley		1864	4-4-0	14x22"	54"	Ex Me. C. #46
		Farmington acquired in 1877.							
	#2	Dover	Portland	#161	1869	4-4-0	13x22"	60"	
		Rebuilt to standard gauge			1877		14x22"		
	#3	Moosehead	Portland	#168	1869	4-4-0	13x22"	60"	
		Rebuilt to standard gauge			1877		14x22"		
	#4	Hamlin	Portland	#162	1869	4-4-0	14x22"	60"	
		Rebuilt to standard gauge			1877				
	#5		Manchester	#1195	1884	4-4-0	16x22"	57"	
	#6		Amoskeag	#70	1852	4-4-0	13x22"	60"	
						Ex B&KIWRy. #1			
		Rebuilt			1890				
	#7		Manchester	#1172	1884	4-4-0	14x22"	60"	
						Ex B&KIWRy. #3			
	#8		Manchester	#1368	1888	4-4-0	16x24"	60"	

These changes will affect B. A. R. Nos. 1, 5, 6 and 7 in the 1893 to 1907 series and Nos. 201 and 209 in the 1907 to 1940 series.

First #1 on the above list was purchased second hand, possibly from either the Maine Central or the Grand Trunk and was used to construct the road. It was scrapped in 1877 when the road was changed to standard gauge.

Again quoting from Mr. Cram:

"Now, from April 1, 1892 to April 1, 1899, the Bangor & Piscataquis R. R. Co. was under lease to the B. A. R. and the lessee was under obligation to keep the property up, so, in 1893 the B. A. R. bought (out of the earnings of the B & P branch) Locomotive No. 16 and put title in the lessor (B & P).

"In 1898 (to become effective after the 1899 Legislature should approve), the B. A. R. bought the Piscataquis outright (but not the K. I. Wks. until later) and to refinance it mortgaged, April 1, 1899, all of the Piscataquis property in its 'Piscataquis Division Mortgage 1893/1943' and among its property 'seven locomotives, numbered, one, two, three, four, five, eight and sixteen.'

"The Bangor & Aroostook did not change the Piscataquis numbers until 1907 (if any but No. 16 was left then). The first locomotives bought by the Bangor & Aroostook were Nos. 9, 10, 11 and 12 in 1893. (I met No. 9 when she reached Brownville).

"The Patten & Sherman owned but one locomotive, probably described as No. 1. B. A. R. Nos 2 and 3 were leased to them from time to time, ('26 days in September 1899' for No. 2). The B. A. R. leased the Patten & Sherman in January 1901 and bought it in December of that year.

"The B. A. R. bought no wood burners and, you will note that of B & K. I. W. and B & P Nos. 1 to 8, inclusive; Nos 5, 7 and 8 specifically were changed to coal in 1895 and 1896. Our reports show that 'three more' (numbers not given) were so changed in 1897.

"The Patten & Sherman burned coal (they bought it of us) so it is fair to assume that as Nos 2 and 3 were each rented to them from time to time, they were two of the three. I would guess that No. 4 was the other."

The facts as set forth by Mr. Cram are taken from the corporate records and there is no question as to their accuracy. We are deeply indebted to him for taking the time to ascertain the true facts and we are glad to be able to publish them as a correction to the material that appeared in our Bulletin #53.

The Empire State Express

The management of the New York Central has recently announced its intention of purchasing thirty-two stainless steel cars for service on this train that is celebrating its fiftieth anniversary.

It was on October 26, 1891 that this train commenced to serve the people of New York State. At first, the service was west bound only. The running time for the 440 miles was 8 hours and forty minutes. It was not until June 27, 1892 that similar east bound service was established.

In this day of high speed many of us are prone to overlook the fact that "The Empire" was the pioneer fast train in this country, if not in the entire world. Previous to 1890 the speed of our passenger trains was nothing to brag of. In 1886, for example, the "New York & Chicago Limited" on the Pennsylvania System, required 24½ hours to make the running time between those two points and the same road had a few express trains between New York and Philadelphia that made the running time in a few minutes better than two hours. On the New York Central, the "Limited Fast Chicago Express" arrived in that city 24 hours after leaving New York. There is no question that considering the distance, the number of changes of locomotives required, the connecting roads, that these schedules were good for that period.

It remained for that capable General Passenger Agent of the New York Central—Mr. George M. Daniels, to capture the imagination of the travelling public, by placing in service a fast train the length of the Empire State. Even so, it would not have been a success without the co-operation and ability of the men with the Schenectady Locomotive Works and Mr. James Buchanan, S. M. P. of the New York Central. After it was demonstrated that the run could be made, the road soon settled down to maintaining what was soon called and with considerable pride—The Fastest Long Distance Train in the World.

In our Bulletin #37, George Becker has related how this train soon became a household word. Children's toys were made to resemble this train and stickers bearing its likeness could be found on household articles. If ever a train and a locomotive was known throughout the world, it was the "Empire State Express" and the famous 999.

Smoker, coaches and chair car—four in all, it started out to serve the cities of New York, Albany, Utica, Syracuse, Rochester and Buffalo. It has always been a democratic train in that it has always carried coaches and never charged an extra fare. Even during the Railroad Administration of the last war, it was a satisfaction to the writer to hear the Train Announcer at the old Exchange Street Station in Buffalo call out the departure of "The Empire State Express." This, in a day, when trains and even railroads almost lost their identity, so far as the public was concerned.

From four cars the train has grown; more than twice that number will not comprise the consist. For "The Empire" not only serves the cities of the state whose name it bears but it also carries through equipment to Cleveland, Toronto and Detroit, thus giving these cities a direct

connection with this famous train. Other fast trains on this road such as the "Century," "Commodore Vanderbilt," "Detroiter" and "Southwestern Limited" may have dimmed her glory a bit but there will always be "The Empire"—we can't imagine the New York Central without this train. May the new train carry on the glorious traditions of the old one—that of serving the people faithfully and punctually and without injury or loss of life to a single passenger through a train accident. Such is the enviable record of America's first high speed, long distance passenger train.

Worth Reading

(Compiled by Elizabeth O. Cullen, Reference Librarian, Bureau of Railway Economics, Association of American Railroads, Washington, D. C.)

BOOKS AND PAMPHLETS

Anything, Anywhere, Any Time, by Association of American Railroads, Washington, D. C. [12] pp. including *Map: The Nation's Network of Super-Highways—The Railroads.* Available on request to the Association. " . . . An inherent advantage peculiar to the railroad—the super-highway of steel on which trains of cars may be moved with a unit of motive power—is that it can haul anything large or small, heavy or light; that it can haul anything, anywhere on this continent in one coordinated transaction; that it can haul anything, anywhere, any time, in all weathers and all seasons; and that it can do its job at an average level of costs and charges below that of any other form of transportation . . ." [p.12].

The Freight Traffic Red Book 1941, compiled and edited by Charles J. Fagg, Walter W. Weller and Arthur B. Strunk. 1391 pp. Folded *Map: Railroad Freight Classification Territories and Freight Association Rate Territories.* ". . . It has not been our purpose to prepare an extensive treatise on any of the subjects embraced herein, nor to offer any new idea for solving the many complex transportation problems, but to give in an unbiased and brief, yet comprehensive, form the fundamental principles underlying the transportation business as thus far developed, together with the present laws, rules, and practices governing the operation of our great transportation system—all under one cover and in a form that would make it truly a ready-reference book for the busy traffic man and a text-book for the student of Traffic Management . . ." Preface, p. 3.

Inland Ocean, by Lewis K. Sillcox. 30, 19 plano. pp. Illus. Address before Graduate School of Business Administration, Harvard University, January 9, 1941. ". . . A project such as the St. Lawrence River Deep Waterway Canalization and Power Developments frustrates all attempts toward impartial evaluation . . . Seaway proposals are of no recent origin . . ." pp. 3, 4. Reprinted in part in Mechanical Engineering, April 1941, pp.261-268. Summary in Railway Age, April 5, 1941, under title: *Sillcox Examines St. Lawrence.*

Railroad Competition and the Oil Trade, 1855-1873, by Rollan Harper Maybee. x, 451pp. Maps. Mt. Pleasant Mich., Central State Teachers College Extension Press. Bibliography pp. 409-429.

Railroad Map of the United States—Issue of October, 1940, prepared under the direction of Chief of Engineers, U. S. Army. Washington, D. C., Engineer Reproduction Plant. 15 cents per sheet, or 60 cents for whole map. Scale: ". . . Approximately 40 miles to 1 inch." When mounted, makes a wall map approximately 7x4 feet.

Railroads and National Defense in the United States—Some Current Discussions in this Library, February 28, 1941, compiled by Bureau of Railway Economics Library, Association of American Railroads, Washington, D. C. [5], 62 mimeo. 1. Available on request to Library. Includes extracts quoted from speeches and reports, and Author Index.

Railway Problems of 1941, by M. J. Gormley. 16 pp. Washington, D. C., Association of American Railroads. Available on request. Mr. Gormley's address before 2d Annual Western Transportation Conference, The University of Southern California, Los Angeles, March 13, 1941. "... We ask shippers to remember that an increase in the lading of one ton per car, based on the 1940 traffic, is equivalent to adding 40,000 cars to the car supply. We ask the railroads to remember that a decrease in the turnaround time of cars of one day has the effect of adding 100,000 cars to the supply . . . I close with the reminder again that there are no bottlenecks in transportation so far as railroads are concerned. They can only be created by a violation of the principle that cars must not be loaded beyond the ability of the receiver to unload promptly . . ." p. 16.

A Review of Railway Operations in 1940, by Julius H. Parmelee. 40 pp. Washington, D. C., Bureau of Railway Economics Special Series Bulletin No. 70. Available on request. Reprinted, by permission, from Railway Age, Annual Statistical and Outlook Number, January 4, 1941, with figures complete for 1940.

Transportation Today, by Ralph Budd. 16 pp. Washington, D. C., Association of American Railroads. Available on request. His address at presentation of The Washington Award for 1941, Chicago, Ill., February 24, 1941. Appendix, pp.11-61, contains letter of J. J. Pelley, President, Association of American Railroads, transmitting to Mr. Budd as Transportation Commissioner, Advisory Commission, U. S. Council of National Defense, *Estimated Demand for Railroad Freight Service—1941 and 1942 (Reflecting probable direct and indirect effects of the National Defense Program),* by Bureau of Railway Economics, which Mr. Budd comments upon in this address.

Articles in Periodicals

Check List of Publications on American Railroads before 1841. Part I, compiled by Thomas Richard Thomson. Bulletin of The New York Public Library, January 1941, pp. 3-68. ". . . prepared at The New York Public Library and checked by thirty-five co-operating libraries [listed on pp.7-8], was compiled for the purpose of listing printed books and pamphlets, including state and federal documents, issued before the year 1841, which might be considered important to the student of American railroads . . ." p. 3. Earliest dates of publications listed, 1805, (p.9).

Ferrocarriles Colombianos, by Guillermo Camacho G. Revista del Consejo Administrativo del los FF. CC. Nacionales, Bogotá, Colombia, February 1941, pp.1175-1308, with maps and tables, part folded, and illustrations. *Parte I—Informacion General* includes a history of transportation, railroad and other, in Colombia. *Parte II—Ferrocarriles Nacionales de Colombia* presents the railroads as they are organized and operated today. Copies of the Revista may be obtained on application to the Consejo Administrativo in Bogotá.

[*A General Survey of American Transportation System*]. American Transportation Review, Philadelphia, Penna., January 15, 1941, pp. 1-42. Since this review is printed in Chinese, it can be read by relatively few persons, but it is interesting to read in parentheses in the text, American terms and titles.

The Preparation and Maintenance of Track for High Speed Operation, by H. R. Clarke. New England Railroad Club Proceedings, February 11, 1941, pp.193-201, with discussion pp. 201-215. Respectfully urged on anyone interested in accurate and effectively presented data on track developments, speed developments and related highlights of railroading in this country from the beginning, and especially in the last five years.

Railroads Ready—Without Fuss or Feathers, They are Expanding Carrying Capacity In Step with Defense Plans, by Robert S. Binkerd. Current History & Forum, April 1941, pp. 44-46, 54.

The Romance of Rail Transportation, by C. W. Braden. Canadian Railway Club Official Proceedings, March 14, 1941, pp. 27-71. In introducing Mr. Braden, Walter T. Comley mentioned, p.26: ". . . He goes back to the early colonial days with the development of the various forms of transportation . . . and then goes to England, the birthplace of the railroad locomotive . . . then back to the United States, covering the advancement of the pioneer railroad; . . . down to our present day, bringing in the economic and political features in connection therewith . . ."

Sacramento Union, Sacramento, California. 90th Anniversary Edition, March 23, 1941. Includes numerous illustrated articles on how to get to and from Sacramento from Spanish colonial days, down to the present time.

Some Notes on Locomotive Development and Design on the South African Railways, by W. A. J. Day. South African Railways and Harbours Magazine, Johannesburg, South Africa, January 1941, pp. 37-58, with Illustrations, charts diagrams. ". . . Many factors have to be considered in designing engines for use on the S. A. R. Our requirements are unique. There is no other country where they are similar to South Africa; therefore, it has been necessary to evolve types of our own which are not copies or even similar to locomotives elsewhere. The gauge (3ft. 6in.) is not so great a handicap as might be supposed . . ." p.38.

Transport Services and the War . . . Railway Gazette, London, England. Illustrations, Maps, Reproductions. A weekly section of Railway Gazette, from the issue of September 1, 1939—current issues. *Transport Services and the Crisis,* p. 334, September 1, 1939, was continued as *Transport Services and the War,* pp. 358-360, September 8, 1939; pp. 382-384, September 15, 1939, and *Transport Services and the War—4,* pp. 410-411, September 22, 1939, with footnote explaining "Previous articles in this series . . ." *Transport Services and the War*

—*80*, pp. 257-259, March 7, 1941, includes maps: "The railways of Hungary as enlarged by territorial acquisitions during 1938-39; subsequently Hungary took over from Roumania a portion of Transylvania" p. 258; "Sketch map of the South African Airways" p. 259. Helpful in keeping up with what is happening in and to transport of all kinds, all over the world, as the result of the war.

The Usefulness of Useless History, by Robert Livingston Schuyler. Political Science Quarterly, March 1941, pp. 23-37. "With apologies to Dr. Abraham Flexnor, whose article on 'The Usefulness of Useless Things' (Harper's Magazine, October 1939) suggested this title . . ." footnote, p. 23.

New Books

LOCOMOTIVES ON PARADE, by Edward Hungerford, 236 pages, 8¾ x 6⅜, illustrated. Bound in cloth. Published by Thomas Y. Crowell Co., 432 Fourth Ave., New York, N. Y. Price $2.50.

Here is a book that many of us have been hoping would be published for a long time. It narrates in the most interesting manner the development of the locomotive without the frills and arguments relative to valve gears, link motions, front ends and weights on drivers.

The first chapter is devoted to the early English railways and the experiments of Messrs. Fitch, Fulton and Stevens. These, properly, were the Beginnings. But from this point on, the book is definitely on American rails. The "Stourbridge Lion," "Best Friend of Charleston," "De Witt Clinton," locomotives of the sixties, through the period of the "Gay Nineties" to the most modern type of today, including the Diesel, all are recounted in the most interesting and easy fashion. Truly, any boy ,whether eight or eighty will enjoy this book.

Mr. Hungerford, by training, was a newspaper man. He has used this view point in writing his book. His pages devoted to the heavy passenger traffic on the New York Central do more to convince the reader for the abandonment of the Pacific type of locomotive, a type that has and still does fine service, for the Hudson, than the same number of pages filled with figures devoted to boiler capacity and draw bar pull. The drawings of Mr. Frank B. Masters, combining accuracy with clarity and neatness add much to the value of the book. A good index of subject matter and illustrations completes the text and, if you want the honest-to-goodness opinion of your Editor, the purchase of a copy of this book will yield you not only pleasure in its reading but in its value for reference work.

CABLE CAR DAYS, by Edgar M. Kahn, 124 pages, 10 x 6¾, illustrated. Bound in Cloth. Published by Stanford University Press, Stanford University, California. Price $3.00.

To many of our members the cable car is associated with the trolley and anything that smacks of either electricity or oil is tabooed by the "steam fan." Granted that this may be true, we must remind these good people that electricity does play an important part in our modern system of transportation today and it, like the "iron horse," has had an interesting history.

The cable car was the forerunner of the trolley and not all of us had the opportunity of observing its operation. It was in San Francisco that the cable car had its birth and here is laid the scene of our story —on the hills of that city encircling the Golden Gate. For half a century it has served this city and here it still operates, despite the inroads of the trolley and 'bus.

The chapter on Andrew S. Hallidie, the man who originated cable-railway transportation and the start of the Clay Street Hill R. R. Co., does more to place credit where it properly belongs than anything that has yet been printed. Truly, he was a "builder, citizen, regent" and "a man of integrity." The success of the Clay Street line gave birth

to other lines, but the former was the "daddy" of them all and its methods of operation were quickly copied.

The book is liberally illustrated and a street map indicates the route of many of the lines. The appendix adds much interesting data relative to their operation. The chapter head drawings and the frontispiece, all by William Wilkie, are delightful.

Yes, the days of the tall hats and the crinolines have gone. So too have the nabobs of the Pacific R. R. of Nob Hill, but the little cars still go clinging up and down the hills of San Francisco and in writing this book, the author had done much in preserving this history that otherwise would have been lost.

In Memory Of

JOHN LEONARD DRISCOLL
68 Spring Street
Catskill, New York
Honorary Member
Who Died on Jan. 2, 1941.

CHARLES M. HOFFMAN
Jonathan Club
Los Angeles, California
Who Died on Feb. 15, 1941.

A. L. WHIPPLE
22 Pennsylvania Ave.,
Crestwood, N. Y.
Who Died in 1940.

JEFFRIES WYMAN
3 Fuller Place
Cambridge, Mass.
Who Died on Jan. 13, 1941.